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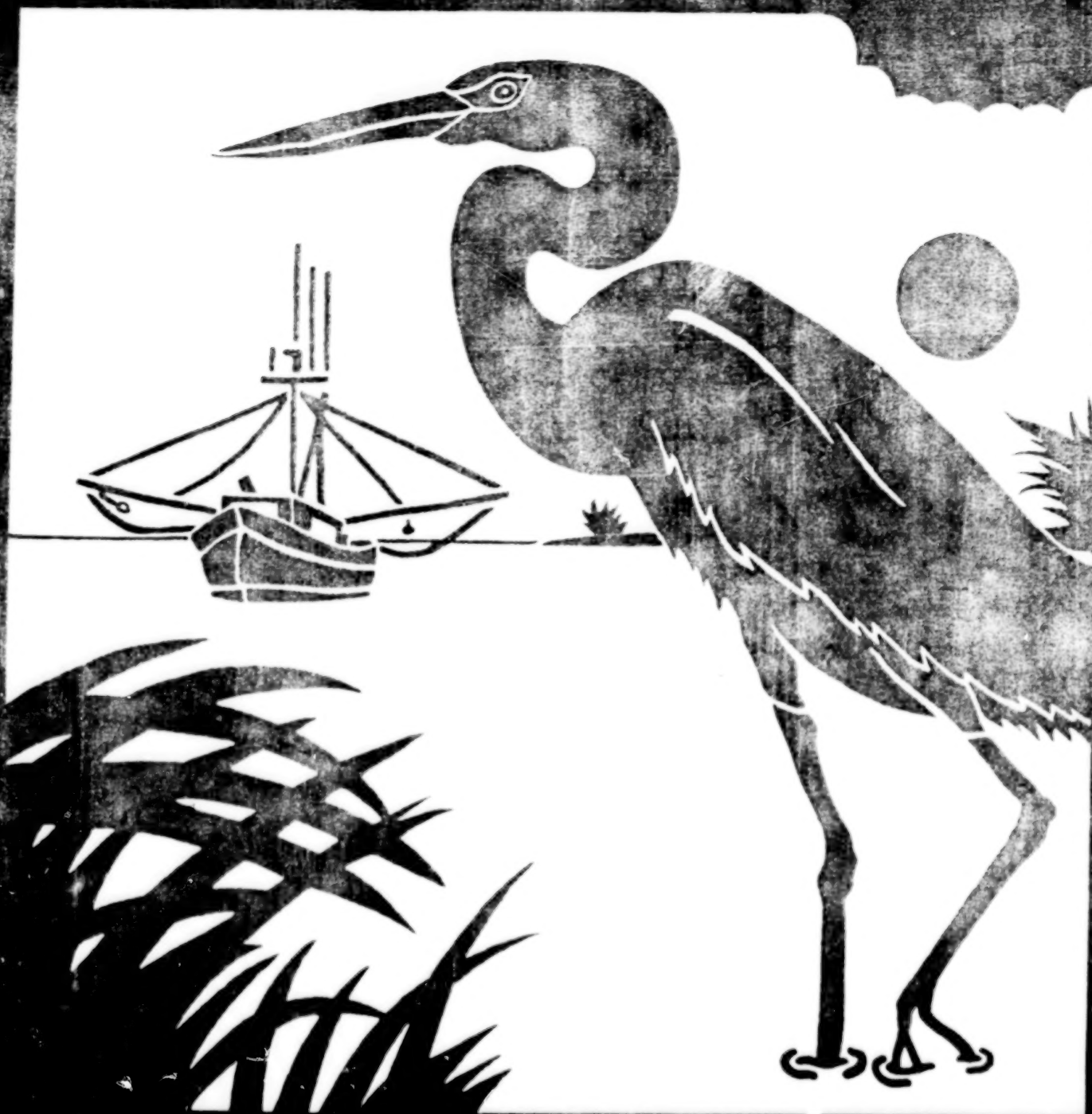
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Gulf of Mexico Update: July 1986 - April 1988

ORIGINAL
COMPLETED

OCS Information Report
MMS 88-0038

Outer Continental Shelf
Oil & Gas Activities



MMS

U.S. Department of the Interior
Minerals Management Service
OCS Information Program

Haw

Gulf of Mexico Update: July 1986 - April 1988

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MMS 88-0038

**Outer Continental Shelf
Oil & Gas Activities**

U.S. Department of the Interior
Minerals Management Service
OCS Information Program

Vienna, Virginia
1988

A

Preface

The Outer Continental Shelf Information Program (OCSIP) of the Minerals Management Service (MMS) has historically made available, free of charge, two types of documents (summary reports and indexes) that have described oil- and gas-related activities in each of the four MMS OCS Regions: the Alaska, the Atlantic, the Gulf of Mexico, and the Pacific. The OCSIP was mandated by the 1978 Amendments to the OCS Lands Act (43 U.S.C. 1352). Many facets of the Federal oil and gas leasing program have changed significantly in the 10 years since inception of the OCSIP. In recognition of these changes, and in an attempt to reduce administrative costs, the OCSIP has recently modified its publications program.

The OCSIP now produces these documents:

- o An annual *OCS Leasing and Operations Procedures* booklet (formerly the *Index*);
- o A streamlined, annual *Offshore/ Onshore Regional Update* report for each of the four MMS OCS Regions (formerly the *Summary Reports*);
- o A biennial *National OCS Compendium* that presents historical information on all of the OCS Regions;
- o A four-part map series detailing regional offshore and onshore information; and
- o An annual *OCS Directory* of Federal and State agencies and their OCS responsibilities.

To order any of these documents, or for more information about them, contact the OCSIP at the following address and telephone number.

OCS Information Program
Office of Offshore Information & Publications
Minerals Management Service, MS 642
1951 Kidwell Drive, Suite 601
Vienna, VA 22180
(703) 285-2285 or (FTS) 285-2285

Please note that as of February 1989, the OCSIP will have a new address as follows:

OCS Information Program
Office of Offshore Information & Publications
Minerals Management Service, MS 642
381 Elden St.
Herndon, VA 22070

Telephone numbers for the new location have not been assigned yet.

Abbreviations and Acronyms

A

API - American Petroleum Institute

B

bbl - barrel
BBO - billion barrels of oil
Bcfd - billion cubic feet per day
BOE - barrels of oil equivalent
bpcd - barrels per calendar day
bpd - barrels per day

C

CFR - Code of Federal Regulations
COST - continental offshore stratigraphic test
CZM - coastal zone management
CZMA - Coastal Zone Management Act

D

DOI - U.S. Department of the Interior
DPP - Development and Production Plan
DRL - drilling
dwt - deadweight tons

E

EA - environmental assessment
EIS - environmental impact statement
EPA - U.S. Environmental Protection Agency
ESP - Environmental Studies Program
EEZ - Exclusive Economic Zone

F

FEIS - Final Environmental Impact Statement
FERC - Federal Energy Regulatory Commission
FR - Federal Register

G

gal - gallon
GAO - U.S. Government Accounting Office
G&G - geological and geophysical

L

lb - pound

M

Mbbl - thousand barrels
Mbpd - thousand barrels per day
Mcf - thousand cubic feet
Mcfd - thousand cubic feet per day

MMbbl - million barrels
MMBO - million barrels of oil
MMbpd - million barrels per day
MMcfd - million cubic feet per day
MMS - Minerals Management Service

N

NEPA - National Environmental Policy Act
NOAA - National Oceanic and Atmospheric Administration
NOI - Notice of Intent
NOS - Notice of Sale
NPDES - National Pollutant Discharge Elimination System
NTL - Notice to Lessees

O

OCRM - Office of Ocean and Coastal Resource Management
OCS - outer continental shelf
OCSIP - Outer Continental Shelf Information Program
OIP - Office of Offshore Information and Publications
OPD - official protraction diagram
OSIM - Office of Strategic and International Minerals
OTA - Office of Technology Assessment

P

PARS - Port Access Route Study
PNOS - Proposed Notice of Sale
POE - Plan of Exploration
PRESTO - Probabilistic Resource Estimates - Offshore

R

RCRA - Resource Conservation and Recovery Act

S

SI - International System

T

Tcf - trillion cubic feet
TPU - Technical Publications Unit
TSS - traffic separation scheme

U

U.S.C. - United States Code
USCG - U.S. Coast Guard
USGS - U.S. Geological Survey

English-Metric Conversion

Measurements in this document are reported in the format that reflects the most common usage. The following table provides the factors for converting measurements to either U.S. Customary or International System of (SI) metric units.

<i>U.S. Customary unit</i>	<i>(multiply by to obtain)</i>	<i>SI Metric unit</i>
inches	2.54	centimeters
feet	0.3048	meters
statute miles	1.609	kilometers
nautical (geographic) miles	1.852	kilometers
acres	0.4047	hectares
barrels (U.S.) petroleum	0.15897	cubic meters
gallons	3.785	liters
cubic feet	0.02832	cubic meters
tons, long (deadweight)	1.016	metric tons

<i>SI Metric unit</i>	<i>(multiply by to obtain)</i>	<i>U.S. Customary unit</i>
centimeters	0.3937	inches
meters	3.281	feet
kilometers	0.6214	miles, statute
kilometers	0.5400	miles, geographic (nautical)
hectares	2.471	acres
cubic meters	6.290	barrels (petroleum, 1 bbl = 42 gal)
liters	0.2642	gallons
metric tons	0.9842	tons, long (deadweight) (2,240 lb)

NOTE: Distances on the Federal Outer Continental Shelf and on land are measured in statute miles. Distances on the offshore State lands are measured in nautical (geographic) miles. Generally, coastal States were granted authority over offshore lands to a distance of 3 nautical miles from their coasts by the Submerged Lands Act (43 U.S.C. 1301 et seq.). The offshore authority of Texas and Florida (on its Gulf Coast side only) extends to 3 marine leagues (approximately 10.35 statute miles) for historic reasons.

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Introduction

The offshore segment of the oil and gas industry that operates in the Gulf of Mexico has undergone significant restructuring in the recent past. This restructuring was brought on by the decline in the price of oil and natural gas that occurred during this period. Figure 1 depicts trends in the price of selected benchmark crude oils for the past 7 years and helps illustrate this point.

During this time, however, oil and gas continued to comprise a significant portion of the energy feedstocks of the Nation. The Outer Continental Shelf (OCS) currently provides approximately 12 percent of the Nation's oil and 25 percent of its natural gas. The Gulf of Mexico accounts for over 90 percent of domestic production of both oil and natural gas from the OCS. These statistics help to explain the continued interest in the OCS of the Gulf of Mexico during a period of declining prices.

Though many unknowns remain, operators have compiled extensive knowledge of the geologic structure of the Gulf of Mexico OCS. This knowledge helps them to minimize losses often associated with drilling in frontier areas. Accordingly, interest in OCS lease sales remains strong as does exploratory and development activity. Reflecting this interest, OCS Lease Sale 113 set a new record for the number of blocks receiving bids.

Operators also are continuing their exploration of the frontier areas of the Gulf of Mexico, such as deep-water areas and the Eastern Gulf of Mexico OCS. As a result of earlier exploratory efforts in the deep-water areas of the Gulf of Mexico OCS, several operators are progressing with plans to develop their discoveries surpassing previous records in the process.

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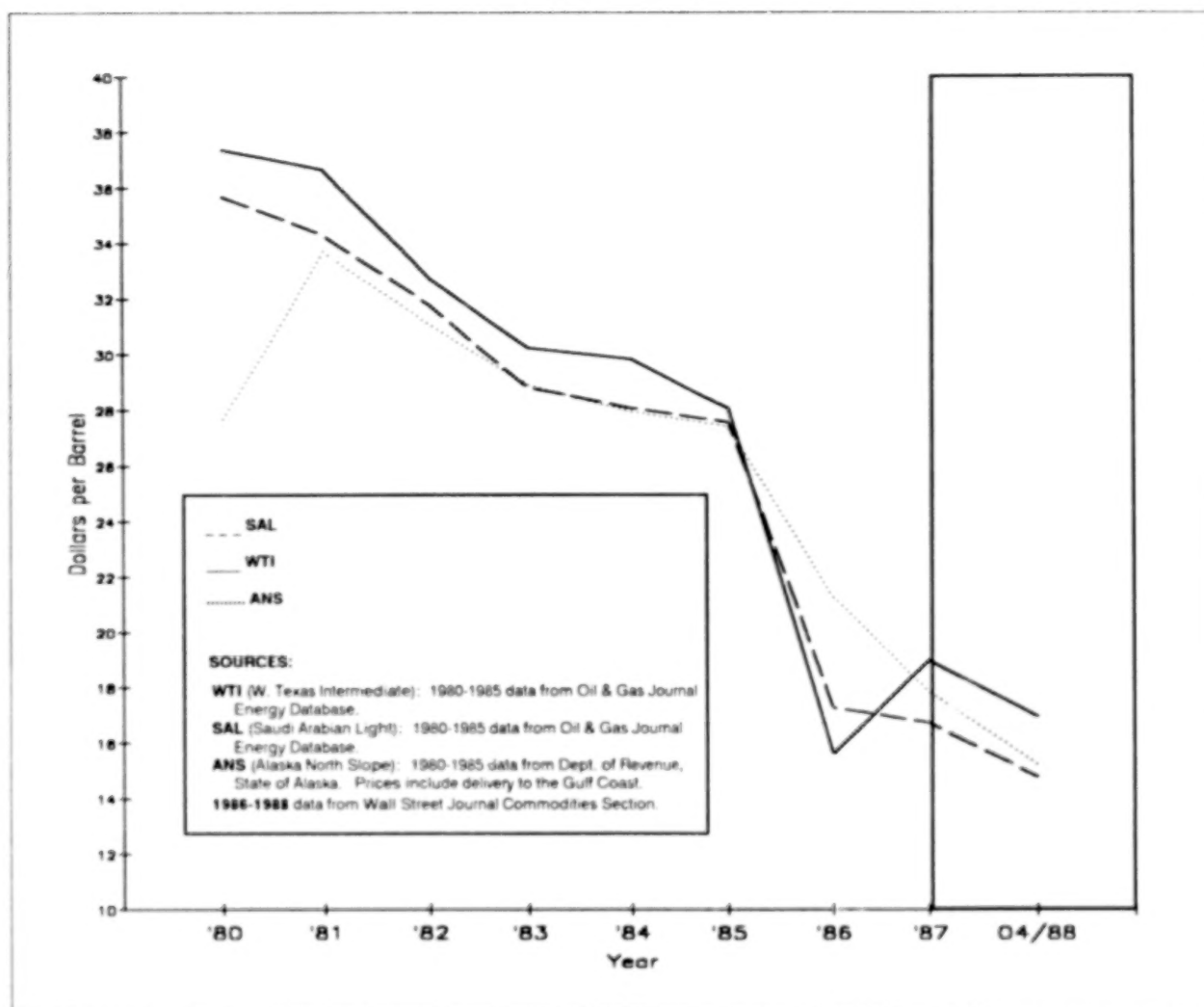


Figure 1.—Prices for selected benchmark crude oils, 1980-April 1988.

1. Offshore Oil and Gas Resources of the Gulf of Mexico OCS Region

Previous Summary/Index reports have provided geologic information about the Gulf of Mexico OCS Region. Please refer to these reports and to the "Additional Readings" section at the end of this chapter for additional geologic information. Figure 2 (p. 4) provides a reference index to the Gulf of Mexico planning areas and their general physiographic features.

Geologic and Geophysical Permit Data

The Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. 1331 *et seq.*), as amended, authorizes the Secretary of the Interior to prescribe rules and regulations necessary to carry out the provision of the Act. Title 30, part 251, of the Code of Federal Regulations (CFR) contains the regulations regarding acquisition of geological and geophysical (G&G) information on the OCS. The MMS administers data acquisition through these regulations. The purpose of these regulations is to prescribe (1) when a permit or the filing of a notice is required to conduct G&G exploration on the OCS, as well as the operating procedures for conducting exploration, (2) the disclosure of data and information, and (3) the conditions for reimbursement of certain costs.

In February of 1988, the MMS published a final rule, effective in March of 1988, which revised the time frames for protection of proprietary geological and geophysical data and information collected under an MMS permit. The terms of protection increased from 10 years to 25 years for geophysical information (the most common acquisition by MMS from industry) and from 10 years to 50 years for geological data. In addition, the maximum protection for G&G information from a deep stratigraphic test well in the absence of a lease being issued within 50 miles of the test well has been increased from 10 years to 25 years. The purpose of this rule is to protect the collector of the data and information from loss of the commercial value of the data and information. The 25-year period of protection for geophysical information, in most cases, provides for several lease sales in a planning area and allows the permittee repeated use of the information. The new term also considers the fact that, for various reasons, certain portions of a

planning area may be unavailable for leasing.

Oil companies have been evaluating over 1,000 leases that are to expire in 1988. This large number of potential expirations resulted in an increase in use of seismic vessels. Seismic activity related to conventional exploratory work was relatively stable, while the use of 3-D seismic technology for development and deep-water exploratory wells increased sharply. Much of the 3-D seismic activity has taken place in producing areas, frequently in shallow waters, in an effort to pinpoint adjacent reservoirs for development. This degree of accuracy becomes particularly important with regard to subsea production facilities, such as pipelines and wellheads, that may obstruct drilling operations. Figure 3 (p. 6) shows the number of G&G permits approved by MMS since 1983. The nearly 50-percent drop in approved permits in all three Gulf planning areas for 1985-86 reflects the decline in oil prices that occurred during this period. In addition to the large number of leases due to expire in 1988, operators are anticipating a significant increase in the demand for natural gas, which also contributes to the increase in seismic activity.

New Exploration Areas and Geologic Trends

Lease sales conducted in 1983 and 1984 provided industry with an opportunity to explore new areas and potential plays. Industry was successful in a number of these new areas. One such area was the Flexure Trend, which is in general oriented northeast to southwest about 100 miles southeast of New Orleans. The Flexure Trend contains an abundance of large anticlinal structures formed by the flow of Jurassic salt and Tertiary and Quaternary shales. The prospective sedimentary strata of the slope area, which are composed of thick sections of Pleistocene age sediments, flank these anticlinal structures. Texaco made a discovery within this trend on block 285 in the Mississippi Canyon area, establishing a Gulf of Mexico water-depth record for perforating and testing. Texaco, with others, made another discovery in the Viosca Knoll area on block 825. Industry also established new drilling and production records where the Flexure Trend extends into deeper

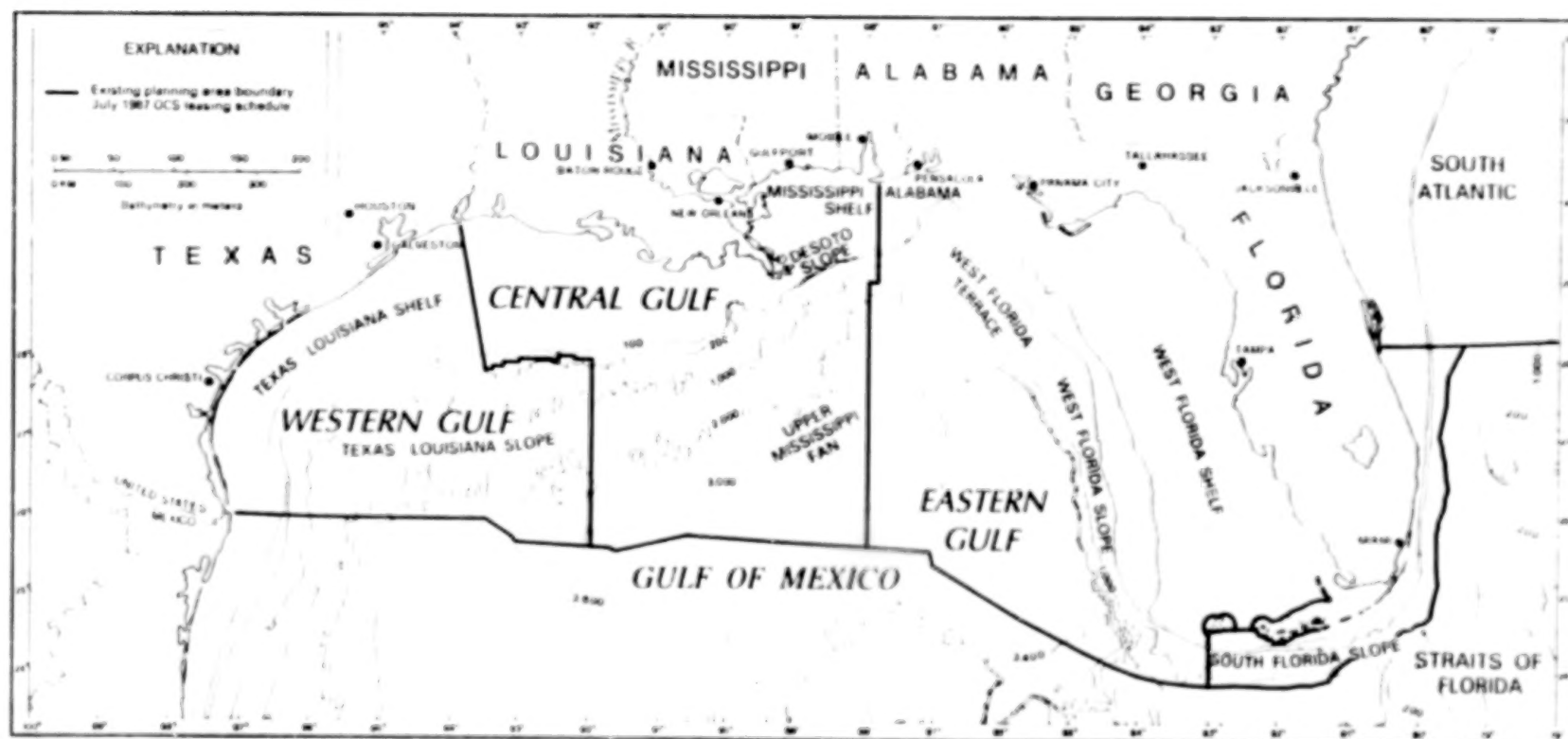


Figure 2.--Physiographic provinces and MMS planning areas in the Gulf of Mexico.

New Exploration Areas and Geologic Trends *continued*

waters. Placid Oil Company placed the Gelf's first floating production platform on Green Canyon block 29 and subsequently established a deep-water well completion record on Ewing Bank block 999 in 1,462 feet of water. Exxon operates Platform Lena the world's first commercial production gaged drilling/production tower on Mississippi Canyon block 280 in 1,001 feet of water. Also on Mississippi Canyon block 194, Shell is the operator for platform Cognac, which is installed in 1,025 feet of water and currently holds the world water-depth record for production from a conventional platform. Shell also established a world water-depth drilling record in Mississippi Canyon block 657 southeast of the Flexure Trend in 7,520 feet of water.

Another area within the Gulf of Mexico that had increased activity is in the area offshore Alabama and Florida. The drilling target in this area is the Norphlet Formation of Jurassic age. The Norphlet fields off Alabama are part of a deep Jurassic gas trend that starts in southern Mississippi, crosses southern Alabama and its offshore waters, and proceeds on into the Gulf of Mexico. The Norphlet reservoirs of natural gas are trapped in salt anticlines that generally trend east to west. The Norphlet Formation is generally deep, typically requiring drilling depths of greater than 20,000 feet in Alabama State waters. In 1979, Mobil Oil Corporation made a significant gas discovery in the Norphlet Formation in Alabama offshore waters. Currently, this is the only production in these State waters. Beyond Alabama State waters in the Federal OCS Mobile official protraction diagram (OPD) area, several discoveries were made in the Jurassic Norphlet Formation, as well as other discoveries in sediments of Miocene age. Several operators have submitted exploration plans for wildcat wells in Federal waters in the Viosca Knoll OPD south of the Mobile OPD.

Estimated Offshore Oil and Gas Resources and Reserves

Section 606(d) of the OCSLA Amendments (43 U.S.C. 1865(d)) requires that the Department of the Interior (DOI) conduct a continuing investigation to determine the availability of all oil and natural gas

produced or located on the OCS. This investigation includes both estimates of the total discovered crude oil and natural gas reserves and undiscovered economically recoverable resources of the OCS. The estimates that MMS prepares are made primarily on the basis of geologic and geophysical data collected by staff geologists and related information gathered from the oil industry. Table 1 shows the most recent oil and gas resource estimates for the Gulf of Mexico OCS.

As of December 31, 1987, there were 750 active fields in Gulf of Mexico OCS Region. Of these, 666 were considered sufficiently developed to permit a reasonably accurate measure of reserves. As has been the case for decades, the Central Gulf of Mexico Planning Area has the majority of the region's fields and reserves with 75 percent of the active fields, 96 percent of the oil reserves, and 84 percent of the gas reserves. Table 2 details active field and reserves information for the Gulf.

Continental Margins Committee

The Continental Margins Committee comprises representatives of coastal State Geological Surveys, including Puerto Rico's, and Hawaii's. The MMS entered into a cooperative agreement with the University of Texas Bureau of Economic Geology, also a committee member. As part of this agreement, the committee members conducted geologic studies relevant to the needs of the coastal States as well as to DOI's offshore leasing program. This agreement was for fiscal years 1983 through 1987, with a renewal in 1988. The University of Texas Bureau of Economic Geology acts as a central contact between the committee and the MMS.

The two areas of study are (1) strategic and critical minerals, in an effort to identify the actual or potential offshore areas where commercial deposits of these minerals may exist, and (2) the geologic framework related to petroleum in order to develop a better understanding of a States' onshore and offshore geology with emphasis on potential petroleum resources.

For more information on this committee and its activities, contact Michael Hunt, Minerals Management Service, MS 643, 12203 Sunrise Valley Drive, Reston, VA 22091, telephone (703) 648-7879.

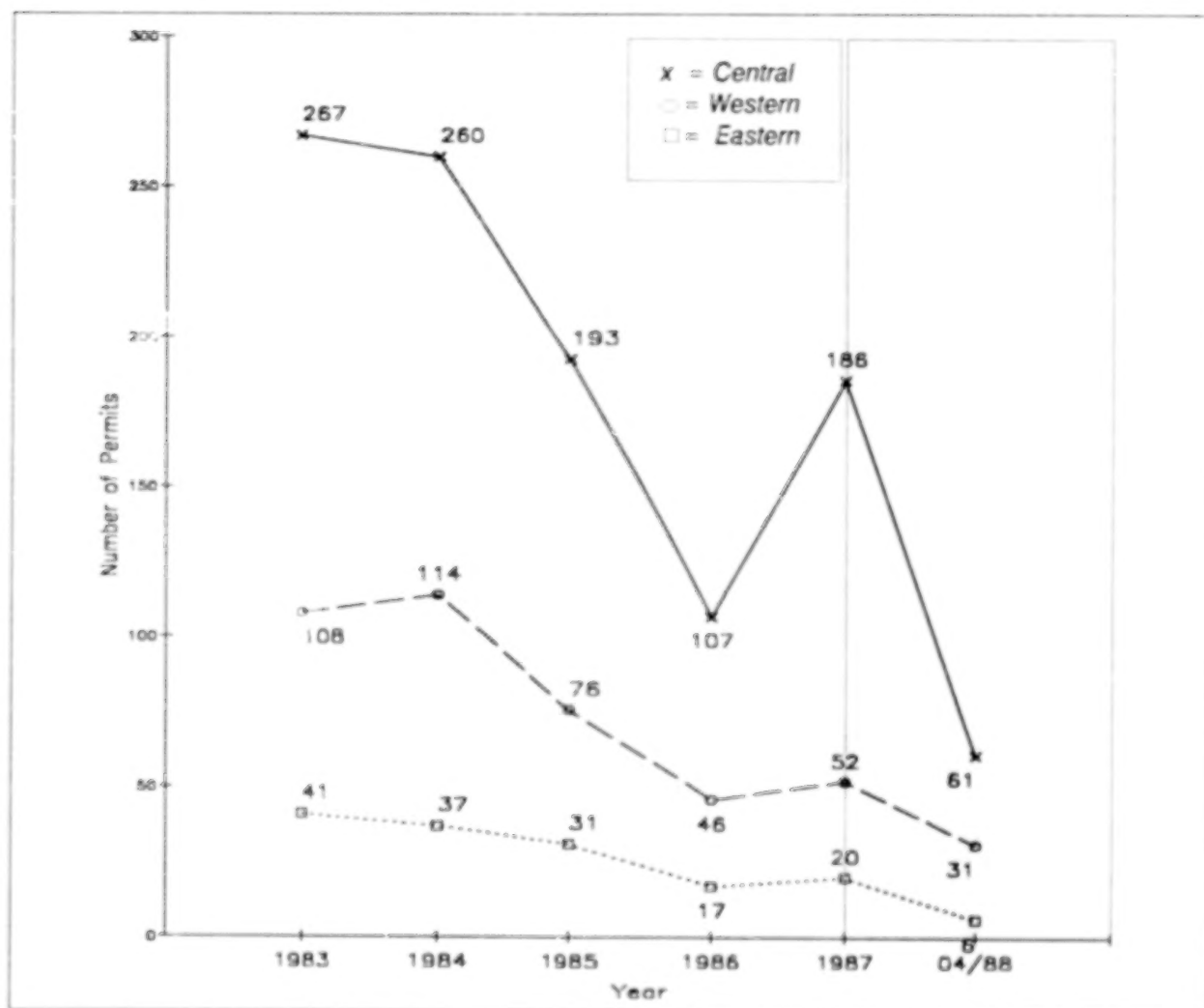


Figure 3.--Geologic and Geophysical permits approved by MMS, 1983 through April 1988.

Additional Readings

Coleman, J. M., and Chacko, J. J. 1986. *Nearsurface Geology in the Gulf of Mexico Exclusive Economic Zone*. School of Geoscience, Louisiana State University.

Melancon, J. M., Brooke, J. P., Compton, J. W., and Knipmeyer, J. H. 1988. *Estimated Oil and Gas Reserves, Gulf of Mexico Outer Continental Shelf, December 31, 1987*. OCS Report MMS 88-0036. Available from Public Information Unit, Minerals Management Service, 1201 Elmore Park Blvd., New Orleans, LA 70124, (504) 736-2519.

Reed, J. C., Leyendecker, C. L., Kahn, and others. 1987. *Correlation of the Cenozoic Sediments on the GOM OCS: Part I, Galveston area offshore Texas to Vermilion area offshore Louisiana*. OCS Report MMS 87-0026. Available from Minerals Management Service, U. S. Department of the Interior, Gulf of Mexico OCS Region, 1201 Elmore Park Blvd., New Orleans, LA 70123-2394.

Table 1.—Gulf of Mexico OCS oil and gas resource estimates as of January 1987

[Oil and BOE in billion barrels; gas in trillion cubic feet]

Planning Area	Conditional oil			Conditional gas			MP _{HC} (1)	Risky mean oil	Risky mean gas	Risky mean BOE(2)
	95% case	Mean case	5% case	95% case	Mean case	5% case				
Eastern Gulf of Mexico										
Leased and unleased	0.07	0.24	0.51	0.01	1.21	3.41	0.90	0.22	1.09	0.41
Unleased	0.06	0.19	0.38	0.01	0.80	2.72	0.89	0.17	0.71	0.30
Leased	0.01	0.09	0.28	*	0.69	1.69	0.59	0.05	0.41	0.12
Central Gulf of Mexico										
Leased and unleased	1.63	3.82	6.70	17.61	37.66	63.40	1.00	3.82	37.66	10.52
Unleased	0.69	2.76	5.51	7.24	25.95	50.86	1.00	2.76	25.95	7.38
Leased	0.46	1.04	1.82	4.88	11.76	20.03	1.00	1.04	11.76	3.13
Western Gulf of Mexico										
Leased and unleased	0.33	1.58	3.41	7.26	25.40	51.31	1.00	1.58	25.40	6.10
Unleased	0.18	1.42	3.24	3.58	21.22	46.73	1.00	1.42	21.22	5.20
Leased	0.03	0.15	0.34	0.81	4.22	8.98	0.99	0.15	4.20	0.90

(1) The marginal probability of hydrocarbons (MP_{HC}): the probability that economically recoverable hydrocarbons exist in the area under study.

(2) The sum of the conditional mean oil multiplied by the MP_{HC} added to the conditional mean gas multiplied by the MP_{HC}, which is divided by 5.62. The gas value is divided by 5.62 to give an energy equivalent barrel of oil (BOE).

*Negligible.

Note: Three categories of resources (unleased, leased, and total) required three separate PRESTO computer runs for each planning area. In some cases, splitting of prospects into leased and unleased caused portions of the prospects to be subeconomic. Therefore, adding the risky mean quantities for the unleased acreage to risky mean quantities for the leased acreage may not result in the risky mean quantities for the total acreage. However, the total estimate was properly derived by running the PRESTO program for all prospects.

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**Table 2.--Estimated demonstrated oil and gas reserves for 704 fields by area,
Gulf of Mexico OCS, December 31, 1987**

[Demonstrated reserves: oil expressed in millions of barrels, gas in billions of cubic feet]

Area(s)	Number of fields				Original recoverable reserves		Cumulative production through 1987		Remaining recoverable reserves	
	Studied		Not Studied	Active with production	Oil	Gas	Oil	Gas	Oil	Gas
	Active	Depleted								
Western Planning Area										
Mustang Island & Padre Island	19	1	3	9	15	1,390	1	440	14	950
Matagorda Island	18	0	4	11	37	4,300	3	750	34	3,550
Brazos	18	3	3	16	10	2,300	4	1,000	6	1,300
Galveston	21	1	2	17	31	1,160	21	780	10	380
High Island & Sabine Pass	85	1	10	71	345	11,500	139	6,500	206	5,000
Western Slope*	9	0	5	5	51	781	5	14	46	767
Subtotal	170	6	27	129	489	21,431	173	9,484	316	11,947
Central Planning Area										
West Cameron & Sabine Pass	82	5	5	70	190	15,800	110	11,300	80	4,500
East Cameron	39	7	3	34	233	8,380	163	6,240	70	2,140
Vermilion	59	4	5	55	500	13,900	300	10,400	200	3,500
South Marsh Island	36	5	2	34	780	11,600	510	8,400	270	3,200
Eugene Island	58	3	1	54	1,510	15,100	950	10,500	560	4,600
Ship Shoal	50	3	4	45	1,250	10,400	860	7,400	390	3,000
South Timbalier	33	1	4	25	1,300	6,500	1,010	4,150	290	2,350
South Pelto	6	1	0	6	130	736	85	400	45	336
Grand Isle	13	2	0	11	910	3,900	740	3,000	170	900
West Delta	19	0	2	18	1,230	4,550	1,000	3,400	230	1,150
South Pass & Viosca Knoll	11	0	1	8	920	2,720	630	1,750	290	970
Main Pass & Breton Sound	39	1	7	30	840	4,020	560	2,570	280	1,450
Chandeleur & Mobile	13	0	12	4	0	1,015	0	140	0	875
Central Slope**	38	0	11	7	480	2,050	170	565	310	1,485
Subtotal	496	32	57	401	10,273	100,671	7,088	70,215	3,185	30,456
Eastern Planning Area***										
Subtotal	0	0	0	0	0	0	0	0	0	0
Subtotal	666	38								
Total	704		84	530	10,762	122,102	7,261	79,699	3,501	42,403

* Western Slope includes Alaminos Canyon, Corpus Christi, East Breaks, Garden Banks, and Port Isabel.

** Central Slope includes Atwater Valley, Ewing Bank, Green Canyon, and Mississippi Canyon.

*** Eastern Planning Area includes Charlotte Harbor, Destin Dome, Pensacola, Pulley Ridge, and others.

2. Magnitude and Timing of Offshore Developments

The Secretary of the Interior has the statutory authority and responsibility to plan for and conduct the offering of leases for OCS acreage as directed in the OCS Lands Act, as amended in 1978 (43 U.S.C. 1331 *et seq.*). The Secretary delegated many of his pre- and postlease responsibilities under this authority to MMS. Detailed information on the structure of and inputs to the OCS oil and gas leasing program has been compiled in a document entitled *OCS Leasing and Operations Procedures*, which will be available Fall 1988, upon request, from the OCS Information Program.

July 1987 Final 5-Year OCS Oil and Gas Leasing Program

In accordance with his statutory mandate (43 U.S.C. 1344), the Secretary prepares and periodically revises a schedule of proposed lease sales covering the four OCS regions administered by MMS. The MMS prepares a leasing milestones chart that projects tentative dates for the various steps for each of the OCS lease sales scheduled under the final 5-year leasing schedule. The most recent revision of this milestones chart was published in April 1988 (see fig. 4, p. 10).

Copies of the July 1987 Final 5-Year OCS Oil and Gas Leasing Program milestones chart and associated documentation are available from the following address and telephone number:

Branch of Offshore Program Development
and Planning
Minerals Management Service, MS-645
U.S. Department of the Interior
18th and C Streets, NW.
Washington, D.C. 20240
(202) 343-1072.

Twelve OCS lease sales were scheduled under the July 1987 Five-Year Schedule for the Gulf of Mexico OCS Region: five were scheduled for both the Western and Central Gulf of Mexico Planning Areas, and two were scheduled for the Eastern Gulf of Mexico Planning Area. The procedures that MMS employs in administering each lease sale are depicted in figure 5 (p. 11).

Recent OCS Oil and Gas Leasing in the Gulf of Mexico

Of the 12 sales scheduled under the July 1987 Final 5-Year Schedule, 2 have already been held. Lease Sale 112 was held on August 12, 1987, and Lease Sale 113 was held on March 30, 1988. In addition to these two sales, two other sales, held under the auspices of the July 1982 Five-Year Schedule, have been held since publication of the preceding *Gulf of Mexico Summary/Index Report*: Lease Sale 105 on August 27, 1986, and Lease Sale 110 on April 22, 1987. Specific information on each of these sales is presented in tables 3 (p. 12) and 4 (p. 13) and in the sidebars (p. 14) that accompany this section.

Effective with Lease Sale 112, the MMS incorporated new initiatives to encourage exploration and development of the OCS. In particular, the minimum bid required for all blocks in OCS lease sales was lowered to \$25 per acre from \$150 per acre. This lowering of the minimum bid may be partially responsible for the record number of blocks receiving bids by oil companies during Lease Sale 113 and the large number submitted in Lease Sale 112. The \$25 minimum bid level had previously been employed in Lease Sale 110, but only for bids on blocks in water depths greater than 400 meters.

In addition to the oil and gas lease sales referred to above, the MMS offered on February 24, 1988, the first OCS sulphur leases available since 1969. A discussion of this sulphur sale follows.

Sulphur and Salt Lease Sale (February 24, 1988)

On February 24, 1988, the MMS conducted a sulphur and salt lease sale for 51 bidding units in the Central Gulf of Mexico OCS Planning Area. This sale provides opportunities for industry to explore for and mine elemental sulphur from salt-dome cap rocks. Increased domestic sulphur production will lower the Nation's reliance on foreign imports. Up to 20 percent of the Nation's sulphur supply is currently imported, primarily

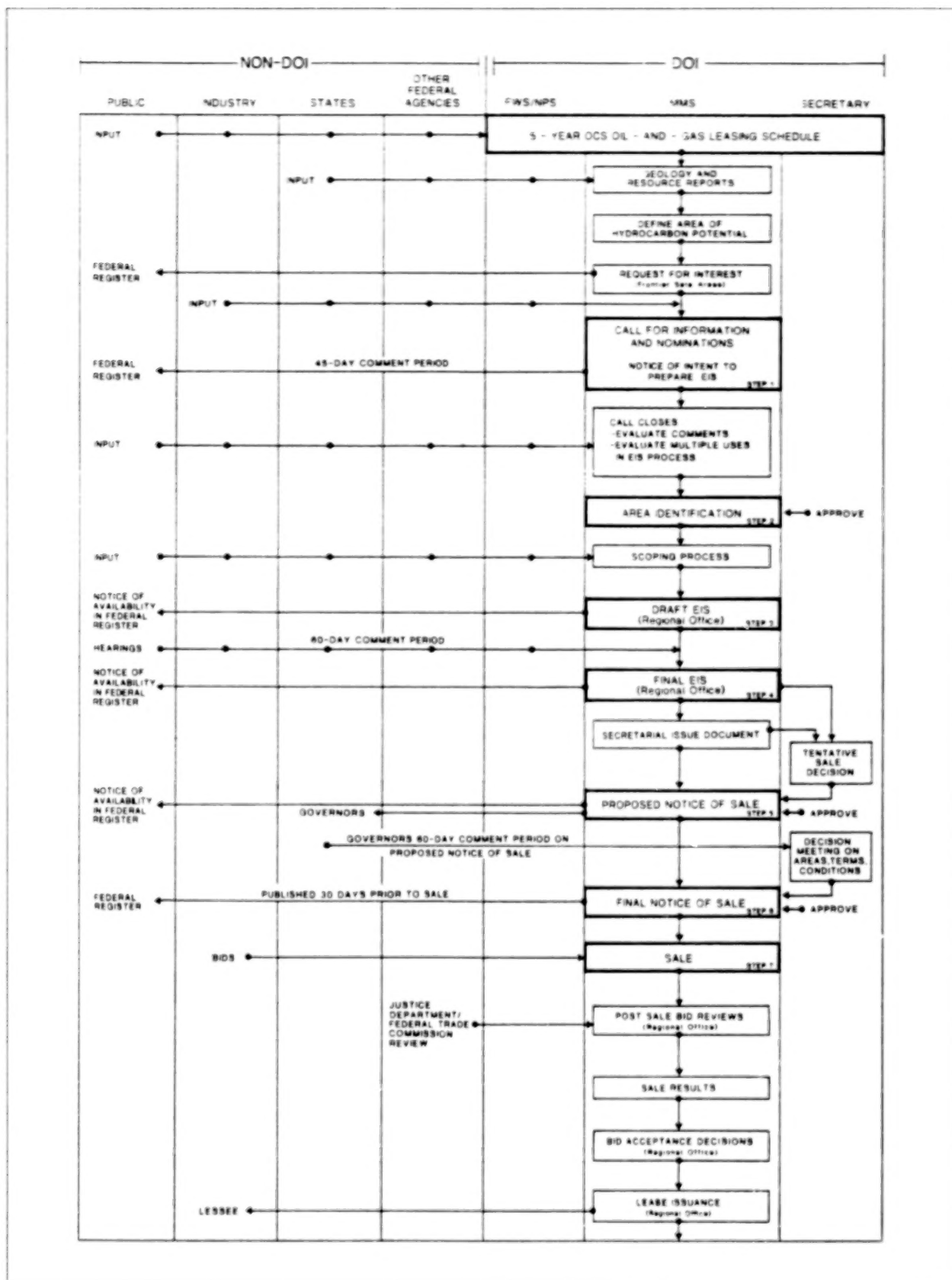


Figure 5.--The OCS leasing process--the prelease phase.

Table 3.--Dates of significant prelease steps for recent Gulf of Mexico OCS lease sales through April 1988

Lease Sale Number/Area	STEP 1 Call for Information/ Call for Nominations And Comments	STEP 2 Area Identification/ Tent. Tract Selection (Public Announcement)	STEP 3 DEIS (Notice of Availability)	STEP 4 FEIS (Notice of Availability)	STEP 5 PNOS Proposed Notice of Sale	STEP 6 NOS Notice of Sale	STEP 7 Sale
105, Western	49 FR 24807 06/15/84	10/03/84	50 FR 19495 05/08/85	50 FR 46188 11/06/85	51 FR 11504 04/03/86	51 FR 26644 07/24/86	08/27/86
110, Central	50 FR 26054 06/24/85	09/23/85	51 FR 16902 05/07/86	51 FR 40082 11/04/86	51 FR 43249 12/01/86	52 FR 7536 03/11/87	04/22/87
112, Western	50 FR 26054 06/24/85	09/23/85	51 FR 16902 05/07/86	51 FR 40082 11/04/86	52 FR 8116 03/16/87	52 FR 25158 07/02/87	08/12/87
Salt & Sulphur, Central	51 FR 37128 10/17/86	12/30/87		***52 FR 24269 06/29/87	52 FR 34346 09/10/87	52 FR 48650 12/23/87	02/24/88
113, Central	51 FR 19042 05/23/86	08/22/86	52 FR 15995 05/01/87	52 FR 38282 10/15/87	52 FR 44230 11/18/87 **52 FR 48883 12/28/87 *53 FR 597 01/08/88	53 FR 4334 02/12/88	03/30/88
115, Western	51 FR 19042 05/23/86	08/22/86	52 FR 15995 05/01/87	52 FR 38282 10/15/87			(08/88)
116, Eastern	51 FR 19042 05/23/86	08/22/86	52 FR 15995 05/01/87	52 FR 38282 10/15/87			(11/88)
118, Central	52 FR 21210 06/04/87	08/28/87	53 FR 10299 03/30/88 *53 FR 13332 04/22/88				(03/89)
122, Western	52 FR 21210 06/04/87	08/28/87	53 FR 10299 03/30/88 *53 FR 13332 04/22/88				(08/89)

* Correction

** Amendment

*** Environmental Assessment

Sulphur and Salt Lease Sale (February 24, 1988) *continued*

from Mexico and Canada. In-situ salt may be used in the production process, but because of nonsupportive market conditions, it is not expected that any will be produced for commercial sale.

The MMS conducts sulphur and salt lease sales under a delegation of authority from the Secretary of the Interior. The Secretary's mandate is derived from the OCS Lands Act (43 U.S.C. 1337 (i-j)). Three offshore sulphur sales have been held, all in the Gulf of Mexico:

- Lease Sale 1 on October 13, 1954, which resulted in five leases offshore Louisiana;
- Lease Sale 13 on December 14, 1965, which resulted in the issuance of 50 leases offshore Texas; and
- Lease Sale 20 on May 13, 1969, which resulted in four leases offshore Louisiana.

After the last of these sulphur lease sales, sulphur prices fell and accordingly so did industry interest in offshore sulphur mining. In 1976, however, sulphur consumption exceeded domestic production. Sulphur prices then rose, rekindling industry interest in offshore mining.

During the February 1988 sale, the MMS received 20 bids from five companies for 14 of the 51 bidding units. These 51 bidding units were composed of 153

blocks that encompass 724,798 acres. The MMS accepted all of these bids, and subsequently issued leases for the bidding units to which they applied. Each of these leases carries a primary term of 5 years with automatic extension to 10 years where drilling has occurred before the end of the fifth year, in accordance with an approved plan of exploration (POE). See table 3 (p. 12) for further information on the public steps that MMS followed in conducting the sulphur and salt lease sale.

OCS Lease Sales Scheduled for the Gulf of Mexico

Ten OCS lease sales remain scheduled under the July 1987 Final 5-Year OCS Oil and Gas Leasing Program for the Gulf of Mexico. In addition to these 10 OCS sales, 3 supplemental sales have been scheduled. The relatively few blocks to be offered during supplemental sales will be selected from (1) those blocks on which bids from regular OCS sales were rejected or forfeited during the previous fiscal year and from (2) development blocks, including blocks susceptible to drainage. Blocks in the Western and Central Gulf of Mexico OCS Planning Areas will not be included in supplemental sales because of the regularity of OCS sales in these areas.

Figure 4 (p. 10) showed the remaining prelease steps for each of the sales scheduled under the current 5-year program. Table 3 (p. 12) presented public notices for prelease steps that have already occurred for these sales.

Table 4.—Results of recent lease sales held in the Gulf of Mexico OCS Region through April 30, 1988

Lease sale	Sale date	Sale type	Sale area	Tracts offered	Acres offered	No. of bids rec'd	Tracts leased	Acres leased	Total \$ bonus leased tracts	Average \$ bonus per acre	Existing leases
		(1)	(1)		(2)			(2)	(3)	(3)(4)	
105	08/27/86	G	WGOM	4,887	27,287,952	52	41	229,613	56,817,990	247	41
110	04/22/87	G	CGOM	5,881	31,818,472	385	293	1,539,626	262,971,486	171	293
112	08/12/87	G	WGOM	5,045	27,943,606	519	347	1,908,199	234,275,520	123	347
S&SA	02/24/88	S&SA	CGOM	51	593,971	20	14	142,685	15,149,327	106	14
113	3/30/88	G	CGOM	6,229	33,580,660	931	661	3,411,716	388,559,957	114	661
Totals				22,093	121,224,661	1,907	1,356	7,231,839	957,774,280	132	1,356
Grand Total All Sales				84,814	460,492,804	19,371	7,657	38,441,043	41,111,316,897	1,069	5,052

(1) G = general oil- and -gas lease sale; S&SA = sulphur and salt sale; CGOM = Central Gulf of Mexico planning area

WGOM = Western Gulf of Mexico planning area; EGOM = Eastern Gulf of Mexico planning area.

(2) Amounts are rounded to nearest acre.

(3) Amounts are rounded to nearest dollar.

(4) Sum of the total bonus for all sales divided by the total acreage of all blocks leased.

Lease Sale 105 Statistics

Sale date: August 27, 1986
 Planning area: Western
 Number of tracts offered: 4,887
 Total acreage offered: 27,287,952
 Number of bids received: 52
 Number of block receiving bids: 41
 Total of bonuses from high bids: \$56,817,990
 Number of companies bidding: 16
 Highest bid received: \$8,189,000
 (for Brazos South Addition A51)
 Number of tracts leased: 41
 Total acreage leased: 229,613
 Total of bonuses from leased tracts: \$56,817,990
 Leased tracts at water depths (ft):
 less than 400 meters (1,312 ft) 33
 400-900 meters (1,312-2,953 ft) 0
 greater than 900 meters (2,953 ft) 8
 Deepest block bid on: 7,500 ft
 (Alaminos Canyon 775, 813, 851)

Lease Sale 110 Statistics

Sale date: April 22, 1987
 Planning area: Central
 Number of tracts offered: 5,881
 Total acreage offered: 31,818,472
 Number of bids received: 385
 Number of block receiving bids: 313
 Total of bonuses from high bids: \$290,554,484
 Number of companies bidding: 51
 Highest bid received: \$8.2 million
 (for Ship Shoal South Addition 350)
 Number of tracts leased: 293
 Total acreage leased: 1,539,626
 Total of bonuses from leased tracts: \$262,971,486
 Leased tracts at water depths (ft):
 less than 400 meters (1,312 ft) 147
 400-900 meters (1,312-2,953 ft) 29
 greater than 900 meters (2,953 ft) 117
 Deepest block bid on: 9,100 ft
 (Walker Ridge 470)

Lease Sale 112 Statistics

Sale date: August 12, 1987
 Planning area: Western
 Number of tracts offered: 5,045
 Total acreage offered: 27,943,606
 Number of bids received: 519
 Number of block receiving bids: 367
 Total of bonuses from high bids: \$242,796,331
 Number of companies bidding: 63
 Highest bid received: \$8,348,000
 (for East Breaks 688)
 Number of tracts leased: 347
 Total acreage leased: 2,021,112
 Total of bonuses from leased tracts: \$234,275,520
 Leased tracts at water depths (ft):
 less than 400 meters (1,312 ft) 223
 400-900 meters (1,312-2,953 ft) 20
 greater than 900 meters (2,953 ft) 104
 Deepest block bid on: 10,000 ft
 (Alaminos Canyon 998 and 999)

Lease Sale 113 Statistics

Sale date: March 30, 1988
 Planning area: Central
 Number of tracts offered: 6,229
 Total acreage offered: 33,580,660
 Number of bids received: 931
 Number of tracts receiving bids: 684
 Total of bonuses from high bids: \$404,612,164
 Number of companies bidding: 84
 Highest bid received: \$18,215,000
 (West Cameron 248)
 Number of tracts leased: 662
 Total acreage leased: 3,416,716
 Total of bonuses from leased tracts: 388,730,457
 Leased tracts in water depths (ft):
 less than 400 meters (1,312 ft) 369
 400-900 meters (1,312-2,953 ft) 44
 greater than 900 meters (2,953 ft) 249
 Deepest block bid on: 9,000 ft
 (Walker Ridge 811)

Sulphur & Salt Lease Sale Statistics

Sale date:	Feb. 24, 1988
Planning area:	Central
Number of tracts offered:	51
Total acreage offered:	725,000
Number of bids received:	20
Number of block receiving bids:	14
Total of bonuses from high bids:	\$15,149,327
Number of companies bidding:	5
Highest bid received:	\$3,401,757 (Main Pass, South & East 299)
Number of tracts leased:	14
Total acreage leased:	142,685
Total of bonuses from leased tracts:	\$ 15,149,327

Summary of Postlease Activities on the Gulf of Mexico OCS

Table 5 (p. 16) summarizes postlease activity stemming from recent OCS lease sales in the Gulf of Mexico OCS Region. Figure 6 (p. 17) depicts MMS's procedures in administering OCS postlease activity. Table 6 shows the various categories of postlease activities that reflect offshore activity. The requisite levels of onshore support required by these various offshore activities differ substantially. The greatest level of onshore support is generally required during the development phase of an offshore project. The data presented here will help to identify areas of greatest offshore activity. Offshore operators continued to evidence their interest in the deep-water areas of the Gulf of Mexico OCS during the period of this report. Table 7 (p. 19) itemizes those wells drilled in greater than 1,200 feet of water between July 1986 and May 1988.

Exploration Phase of Postlease Activities

Exploratory drilling levels in the Gulf of Mexico are likely to rise in 1988 and 1989 as the first of the 5-year primary term leases issued during OCS area-wide sales expire. Leases not drilled in accordance with a plan of exploration approved by MMS automatically expire at the end of their primary term. Many of the shallower water, 5-year primary term

leases from OCS Lease Sales 72 and 74 have gone undrilled to date and will expire if not drilled during 1988. Leases from OCS Lease Sales 79, 81, and 84 in similar status will expire in 1989 unless drilled.

Historically, the greatest levels of exploratory interest in the Gulf of Mexico is shown by operators for acreage in the Central Gulf of Mexico OCS Planning Area. The MMS has approved plans of exploration covering over 300 blocks in the Central Gulf of Mexico OCS Planning Area during the period of this report. This represents approximately 65 percent of blocks covered by plans of exploration approved by MMS during this same period. Another third of the plans approved by MMS have covered blocks in the Western Gulf of Mexico; approximately 2 percent of blocks covered are located in the Eastern Gulf.

Representative of industry's continued interest in the deep-water areas of the Gulf of Mexico, Shell Offshore Inc. recently set a new world offshore drilling record when it drilled its No. 1 well on Mississippi Canyon block 657. Using the Sonat drillship *Discoverer Seven Seas*, Shell spudded this well on November 4, 1987, in 7,520 feet of water. This well was later determined producible by MMS and as such, set a new deepwater discovery record.

Exploratory activity in the Eastern Gulf of Mexico OCS Planning Area during the period of this report was focused in the areas offshore the panhandle of Florida. During this period, the MMS approved three plans of exploration focused on seven blocks within two MMS OPD's; two of these plans covered acreage in the Destin Dome OPD, and one covered acreage in the Florida Middle Ground OPD. Four wells and one sidetrack well were drilled in the Eastern Gulf during this period. Further information on these wells can be obtained from table 8 (p. 20).

Development Phase of Postlease Activities

Development of the oil and gas resources of the Gulf of Mexico OCS continued its historical trend during the period of this report. Nearly five times as many plans covering proposed development activities were approved by MMS for the Central Gulf of Mexico OCS Planning Area during this time as there were for the Western Gulf. No operators have submitted plans covering proposed development activities in the Eastern Gulf.

Table 5.—Postlease activity from recent lease sales in the Gulf of Mexico OCS Region through April 30, 1988

No.	Sale		Tracts					Wells Drilled		Number of Leases with Discoveries(1)
	Region	Date	Offered	Leased	Drilled	Percent-age drilled	Pro-ducting	Explora-tory	Develop-ment	
72	Central	05/25/83	7,050	623	368	59	48	599	138	54
74	Western	08/24/83	5,848	406	192	47	25	257	79	15
79	Eastern	01/05/84	8,868	156	8	5	0	11	0	1
81	Central	04/24/84	6,502	453	129	28	16	215	40	17
84	Western	07/18/84	5,446	361	80	22	3	97	10	11
98	Central	05/22/85	4,531	409	72	18	8	99	15	21
102	Western	08/14/85	4,879	195	24	12	3	28	3	7
94	Eastern	12/18/85	6,344	63	2	3	0	2	0	1
104	Central	04/30/86	5,837	101	26	26	5	28	6	5
105	Western	08/27/86	4,887	41	6	15	0	6	0	1
110	Central	04/22/87	5,881	293	24	8	2	36	1	5
112	Western	08/12/87	5,045	347	14	4	0	14	0	0
113	Central	03/30/88	6,229	661	0	0	0	0	0	0
Totals			77,347	4,109	945	23	110	1,392	292	138
Grand Total All Sales			84,814	7,657	3,727	49	1,377	7,920	14,200	

(1) Determinations made between July 1, 1986, and April 30, 1988.

Development Phase of Postlease Activities*continued*

As table 9 (p. 21) indicates, development in the deeper waters of the Gulf of Mexico is progressing. During 1988, several new deep-water records are expected to be set from development activities in the Gulf.

Placid Oil Company will set several new records as it brings production on-line from its Green Canyon blocks 29 and 31 and Ewing Bank block 999, currently expected during the fall or winter of 1988. Placid recently set a Gulf of Mexico water-depth record for a completion on Ewing Bank 999 in 1,460 feet of water. Shell's Platform Cognac previously held the record at 1,025 feet of water. Placid also will set a new world water-depth production record with its Green Canyon block 31 with a well drilled in 2,240 feet of water. Placid will produce these blocks using a floating production system composed of a modified semisubmersible that is tied to a processing platform set in shallower water.

Shell Offshore, Inc. will break the world record for tallest offshore structure when it installs its Platform Bullwinkle in 1,350 feet of water on Green Canyon block 65 during the summer of 1988. Bullwinkle will

stand 1,615 feet tall eclipsing Exxon's Platform Lena, which currently holds that record at 1,305 feet. Shell anticipates that production from Bullwinkle will start in 1989.

Conoco plans to install the first tension-leg wellhead platform in the Gulf of Mexico on Green Canyon block 184 during 1989. Development wells for this project are being drilled during 1988 through a foundation template that is already in place.

A discovery made by Shell Offshore, Inc. in early 1988 set a new record for the Gulf of Mexico. Their discovery well was made on Mississippi Canyon 657 in water 7,520 feet deep. This discovery will help to push the limits of deep-water production technology if the company proceeds with plans to develop because the discovery well lies in waters over seven times as deep as the water at the Gulf's deepest producing platform.

Production Phase of Postlease Activities

As figures 7 (p. 22) and 8 (p. 23) show, the predominant portion of the oil and gas produced from the OCS of the United States comes from the Gulf of

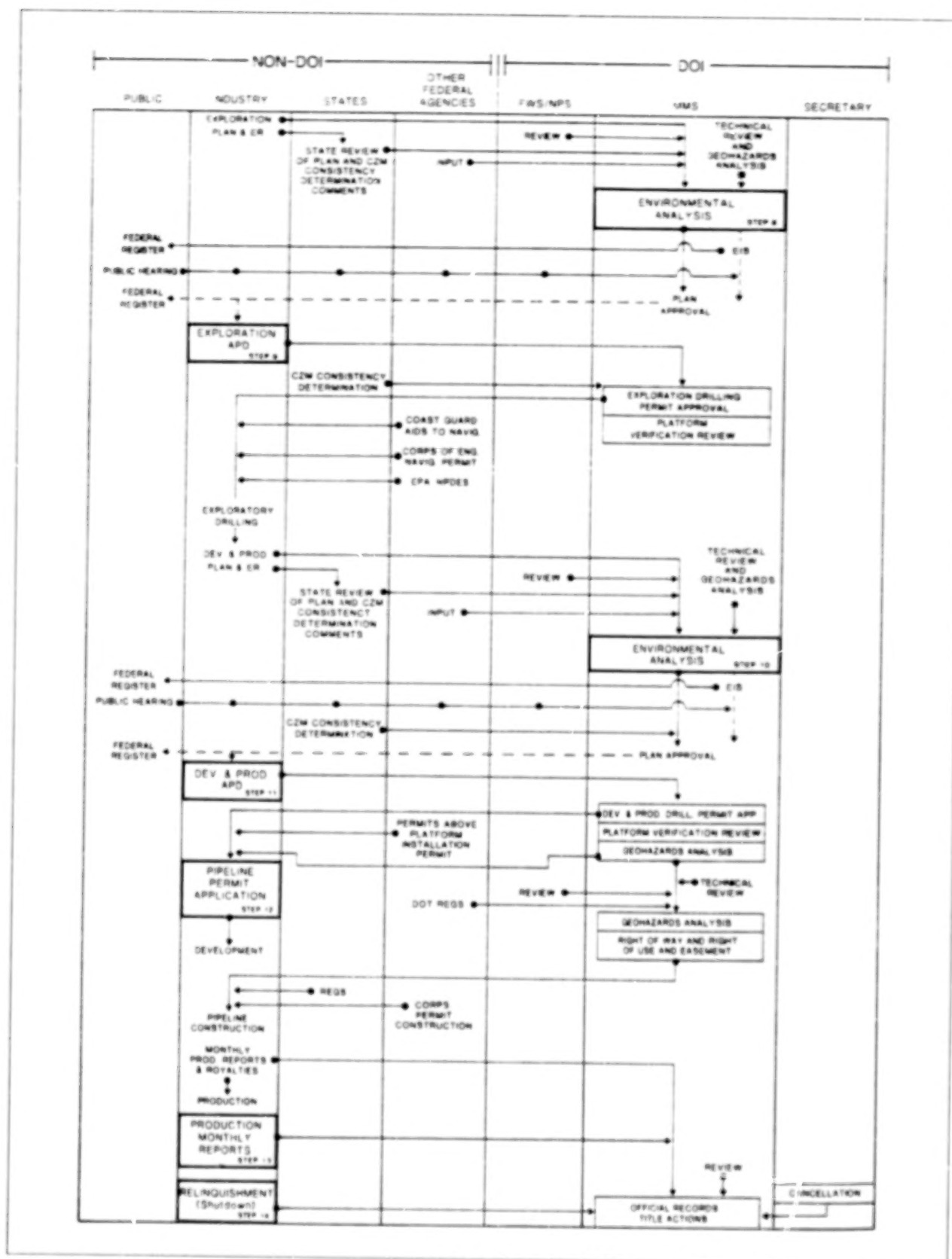


Figure 6.--The OCS leasing process--the postlease phase.

Table 6.--Exploration and development activity in the Gulf of Mexico OCS Region from July 1986 through April 1988

Area	Blocks covered by Approved POE's (1)	Wells drilled		Total Platforms	*APD pending	Blocks covered by Approved DOCD's (1)
		Exploration	Development			
Eastern Gulf of Mexico						
Charlotte Harbor	0	0	0	0	0	0
Destin Dome	6	2	0	0	0	0
Desoto Canyon	0	0	0	0	0	0
Florida Middle Ground	3	1	0	0	0	0
Pensacola	1	3	0	0	0	0
Pulley Ridge	2	0	0	0	0	0
Subtotal	12	6	0	0	0	0
Central Gulf of Mexico						
Atwater Valley	5	1	0	0	0	0
Bay Marchand	0	0	0	15	0	0
Breton Sound	0	0	1	11	0	0
Chandeleur	7	9	2	9	2	5
East Cameron	29	46	24	166	3	23
Eugene Island	33	62	50	481	52	31
Ewing Bank	11	17	4	1	5	7
Grand Isle	4	3	33	85	5	2
Green Canyon	16	33	24	3	8	3
Main Pass	27	47	48	182	19	23
Mississippi Canyon	47	25	29	7	5	0
Mobile	8	22	1	1	1	2
Sabine Pass (Louisiana)	0	0	0	16	0	0
Ship Shoal	16	32	48	509	11	15
South Marsh Island	15	25	39	289	35	13
South Pass	8	5	92	105	10	8
South Pelto	1	1	8	110	2	3
South Timbalier	19	37	56	311	10	13
Vermilion	24	50	53	369	17	24
Viosca Knoll	27	28	1	2	2	2
West Cameron	38	65	38	349	20	30
West Delta	14	30	74	174	8	19
Subtotal	349	538	625	3,195	215	223
Western Gulf of Mexico						
Brazos	9	8	1	37	1	0
East Breaks	18	8	16	4	1	0
Galveston	28	23	10	43	2	13
Garden Banks	20	19	0	1	4	0
High Island	73	72	29	178	17	14
Matagorda Island	11	29	5	49	10	12
Mustang Island	17	20	4	23	13	7
North Padre Island	5	6	7	4	5	2
Port Isabel	1	0	0	0	0	0
Sabine Pass (Texas)	0	1	2	4	0	0
South Padre Island	9	2	0	0	2	0
Subtotal	191	188	74	343	55	48
Total Gulf of Mexico	552	732	699	3,538	270	271

APD = Application for Permit to Drill; DOCD = Development Operations Coordination Document; POE = Plan of Exploration

* Information available for pending permits did not specify the type of drilling.

(1) These numbers include some duplication. Several POE's and DOCD's applied to more than one block and/or leasing area. In addition, these counts reflect both initial plan and supplemental plan approvals and modifications.

Table 7.--Deep-water drilling¹ activity in the Gulf of Mexico OCS Region
from July 1986 through April 1988

Administrative Area	Block number	Lease number (OCS-G)	Operator	Well number	Well type	Spud date	Plugged and abandoned date	Water Depth (ft)
Atwater	471	8512	Shell	1	E	03/29/87	06/25/87	6,794
Ewing Bank	963	5814	Texaco	1	E	12/11/87	02/25/88	1,472
	966	6925	Texaco	1	E	01/14/88	03/03/88	1,755
	966	6925	Texaco	2	E	03/07/88	03/07/88	1,755
	1006	5820	Mobil	1	E	11/28/87	02/02/88	1,783
	1006	5820	Mobil	1	E	02/04/88	02/04/88	1,783
Garden Banks	471	7498	Shell	1	E	02/23/87	06/03/87	2,873
	471	7493	Shell	1	E	06/03/87	07/07/87	2,873
	471	8248	Shell	1	E	07/08/87	11/16/87	2,873
Green Canyon	21	5879	ODECO	3	E	08/18/87	10/06/87	1,296
	29	5882	Placid	1	E	04/01/88	04/13/88	1,522
	32	6995	Amoco	1	E	08/14/87	09/06/87	2,269
	32	6995	Amoco	2	E	09/07/87	02/25/88	2,264
	108	7014	Agip	2	E	07/21/86	09/26/86	1,426
	108	7014	Agip	2	E	09/27/86	10/29/86	1,426
	110	5901	Marathon	2	E	06/21/87	08/18/87	1,754
	110	5901	Marathon	2	E	08/18/87	08/29/87	1,754
	110	5901	Marathon	2	E	08/30/87	10/31/87	1,754
	116	5904	Shell	2	E	11/20/87	01/13/88	2,132
	116	5904	Shell	2	E	01/11/88	01/23/88	2,160
	116	5904	Shell	2	E	01/23/88	02/06/88	2,160
	116	5904	Shell	2	E	02/08/88	02/18/88	2,132
	141	5906	Conoco	1	E	05/04/87	08/27/87	1,720
	147	7020	Texaco	1	E	03/07/88	03/07/88	1,275
	154	5908	Marathon	1	E	02/12/88	02/12/88	1,452
	154	5907	Marathon	1	E	11/04/87	01/10/88	1,452
	154	5907	Marathon	1	E	01/10/88	02/04/88	1,452
	167	7029	Placid	1	E	08/10/86	12/21/86	2,254
	182	4841	Conoco	1	E	09/21/86	11/08/86	1,542
	184	4518	Conoco	A001	D	08/17/87	09/21/87	1,762
	184	4518	Conoco	A002	D	09/24/87	11/13/87	1,762
	184	4518	Conoco	A003	D	11/16/87	01/11/88	1,758
	184	4518	Conoco	A004	D	01/12/88	01/12/88	1,758
	184	4518	Conoco	A005	D	03/05/88	03/05/88	1,758
	205	5911	Exxon	1	E	---	02/17/88	2,650
	228	5912	Conoco	3	E	11/11/86	12/16/86	1,256
	228	5912	Conoco	4	E	08/28/87	09/30/87	1,950
	301	7058	Placid	1	E	07/17/86	12/17/86	3,171
Mississippi Canyon	109	5825	Sohio	2	E	01/25/87	04/11/87	1,205
	201	6941	Texaco	1	E	12/14/87	01/26/88	2,780
	238	6942	Conoco	1	E	01/24/87	03/03/87	1,452
	285	5832	Texaco	1	E	07/03/87	12/10/87	3,161
	285	5832	Texaco	2	E	01/30/88	02/08/88	2,900
	383	7937	Shell	1	E	06/27/87	09/07/87	5,759
	487	6958	ARCO	1	E	02/19/88	03/01/88	1,465
	502	6960	Amoco	1	E	03/09/88	03/11/88	2,450
	505	7946	Shell	1	E	08/28/86	11/18/86	3,174
	583	8492	Shell	1	E	09/09/87	11/05/87	2,150
	657	8496	Shell	1*	E	11/07/87	02/01/88	7,520
	657	8496	Shell	1*	E	02/01/88	02/17/88	7,520
	709	6973	ARCO	1	E	12/23/86	03/10/87	2,599
	709	6973	ARCO	2	E	03/14/87	06/23/87	2,488
	709	6975	ARCO	1	E	12/23/86	03/10/87	2,599
	720	8848	ARCO	1	E	---	02/26/88	3,365
	731	7955	Shell	1	E	11/20/86	02/23/87	5,400
	731	7955	Shell	1	E	02/23/87	03/23/87	5,400
	786	8857	Shell	1	E	02/18/88	03/11/88	7,450
	839	5869	Placid Oil	1	E	07/04/86	09/26/86	1,952
	929	6984	Conoco	1	E	10/05/87	12/07/87	2,250
Viosca Knoll	825	5778	Texaco	1	E	08/08/87	08/18/87	1,710
	873	8471	Shell	1	E	02/21/88	02/24/88	3,810
	956	6896	Shell	2	E	02/20/87	05/06/87	3,553
	956	6896	Shell	2	E	05/06/87	06/10/87	3,553
	956	6896	Shell	2	E	06/11/87	07/06/87	3,553
	956	6896	Shell	2	E	07/07/87	08/06/87	3,553
	989	7898	Sohio	2	E	04/17/87	06/27/87	1,250
	989	8898	Sohio	3	E	06/30/87	08/18/87	1,230

E = exploration; D = development.

* World deep-water drilling record.

(1) Deep water defined for this table as equal to or greater than 1,200 feet.

Table 8.—*Exploratory wells drilled in the Eastern Gulf of Mexico Planning Area as of April 30, 1988*

Administrative area	Block number	Lease number (OCS-G)	Operator	Well number	Spud date	Plugged & abandoned date	Water depth (ft)
Charlotte Harbor	144	3906	Gulf Oil Corp	1	04/09/80	08/14/81	173
Charlotte Harbor	188	3909	Odeco Oil & Gas	1	06/26/81	09/04/81	180
Charlotte Harbor	265	3912	Shell Offshore, Inc	1	01/02/81	04/09/81	324
Charlotte Harbor	622	4950	Shell Offshore, Inc	1	05/10/86	06/21/86	234
Charlotte Harbor	628	3915	Mobil Oil E & P	1	03/29/81	04/12/81	200
Charlotte Harbor	672	3917	Tenneco	1	12/17/80	04/08/81	190
De Soiz Canyon	512	6472	Shell Offshore, Inc	1	04/26/86	06/21/86	1,976
Destin Dome	31	2502	Amoco Production	1	12/03/77	12/14/77	188
Destin Dome	56	6406	Conoco, Inc.	1 TA	06/12/87	01/26/88	187
Destin Dome	111	8338	Amoco Production	1	06/10/87	10/16/87	389
Destin Dome	118	2492	Exxon Corp	1	09/04/74	09/29/74	239
Destin Dome	118	2492	Exxon Corp	2	01/08/75	01/27/75	232
Destin Dome	160	6417	Shell Offshore, Inc	1 TA	01/01/85	05/02/85	281
Destin Dome	160	6417	Shell Offshore, Inc	2	05/09/85	03/16/85	292
Destin Dome	162	2486	Exxon Corp	1	07/07/74	09/03/74	245
Destin Dome	162	2486	Exxon Corp	2	11/27/74	01/07/75	262
Destin Dome	162	2486	Exxon Corp	3	03/02/75	06/12/75	258
Destin Dome	166	2490	Fina Oil	1	10/21/74	03/09/75	145
Destin Dome	207	2480	Exxon Corp	1	02/18/75	03/03/75	280
Destin Dome	250	2472	Exxon Corp	1	01/30/75	02/17/75	296
Destin Dome	284	6428	Exxon Corp	1	06/28/85	11/15/85	607
Destin Dome	360	2468	Gulf Oil Corp	1	04/21/75	10/02/75	300
Destin Dome	422	6438	Chevron USA, Inc.	1	07/01/85	12/21/85	591
Destin Dome	529	3888	Shell Offshore, Inc	1	03/05/80	06/28/80	227
Destin Dome	563	3890	Sohio Petroleum	1	11/19/81	07/29/82	275
Destin Dome	617	2463	Chevron USA, Inc.	1	09/19/77	10/15/77	446
Florida Middle Ground	252	2516	Texaco, Inc.	1	09/22/74	01/26/75	126
Florida Middle Ground	455	8363	Tenneco	1	09/24/86	11/08/86	470
Gainesville	707	6456	Sohio Petroleum	1	06/07/85	11/08/85	70
Pensacola	948	6391	Tenneco	1	02/16/85	10/14/85	164
Pensacola	948	6391	Tenneco	2 ST	06/07/87	10/07/87	159
Pensacola	948	6391	Tenneco	2 TA	10/14/87	01/19/88	159
Pensacola	973	3886	Mobil Oil E & P	1	04/17/81	11/01/81	90
Pensacola	996	6396	Texaco, Inc.	1	04/08/88	DRL	160
St. Petersburg	7	2527	Shell Oil	1	10/24/74	05/09/75	126
St. Petersburg	100	2523	Texaco, Inc.	1	01/27/75	05/26/75	107
The Elbow	566	3344	Mobil Oil E & P	1	04/05/77	10/03/77	220
The Elbow	915	3341	Mobil Oil E & P	1	01/03/81	06/01/81	370
Vernon Basin	654	3903	Mobil Oil E & P	1	01/28/81	04/05/81	455

ST = Sidetrack Well; TA = Temporarily Abandoned

Table 9.--Selected Gulf of Mexico OCS deep-water development projects
as of April 1988

Administrative Area/ Block Number	Operator	Water depth (ft)	Production structure/system (Project name)	Status
Green Canyon 184	Conoco	1,760	Tension-leg wellhead platform (Joliet)	Installation planned for 1987
Green Canyon 21	ODECO	1,270	Unknown	Systems under study/field delineation drilling
Green Canyon 110	Marathon	1,300	Unknown	Systems under study/field delineation drilling
Green Canyon 39	Placid	1,640	Floating production platform	In design
Green Canyon 65	Shell	1,350	Fixed steel platform (Bullwinkle)	Installation during 1988 Production start-up in 1989
Green Canyon 60	Standard	1,100	Fixed steel platform	Field delineation drilling
Green Canyon 29, 31 and Ewing Bank 999	Placid	1,534	Floating production platform	Production start-up in 1988
Mississippi Canyon 335, 354, 398, 399	Exxon	1,211-1,600	Floating production platform (Zinc Prospect)	Planning/engineering - delayed
Mississippi Canyon 109, 110	Standard	1,086	Unknown	Field delineation drilling
Mississippi Canyon 39	Exxon	1,400	Unknown	Systems under study
Mississippi Canyon 280	Exxon	1,001	Guyed-tower platform (Lena)	Producing/drilling for new horizons
Mississippi Canyon 397	Exxon	1,600	Unknown	Field delineation drilling
Mississippi Canyon 194	Shell	1,025	Fixed steel platform (Cognac)	Producing since 1982

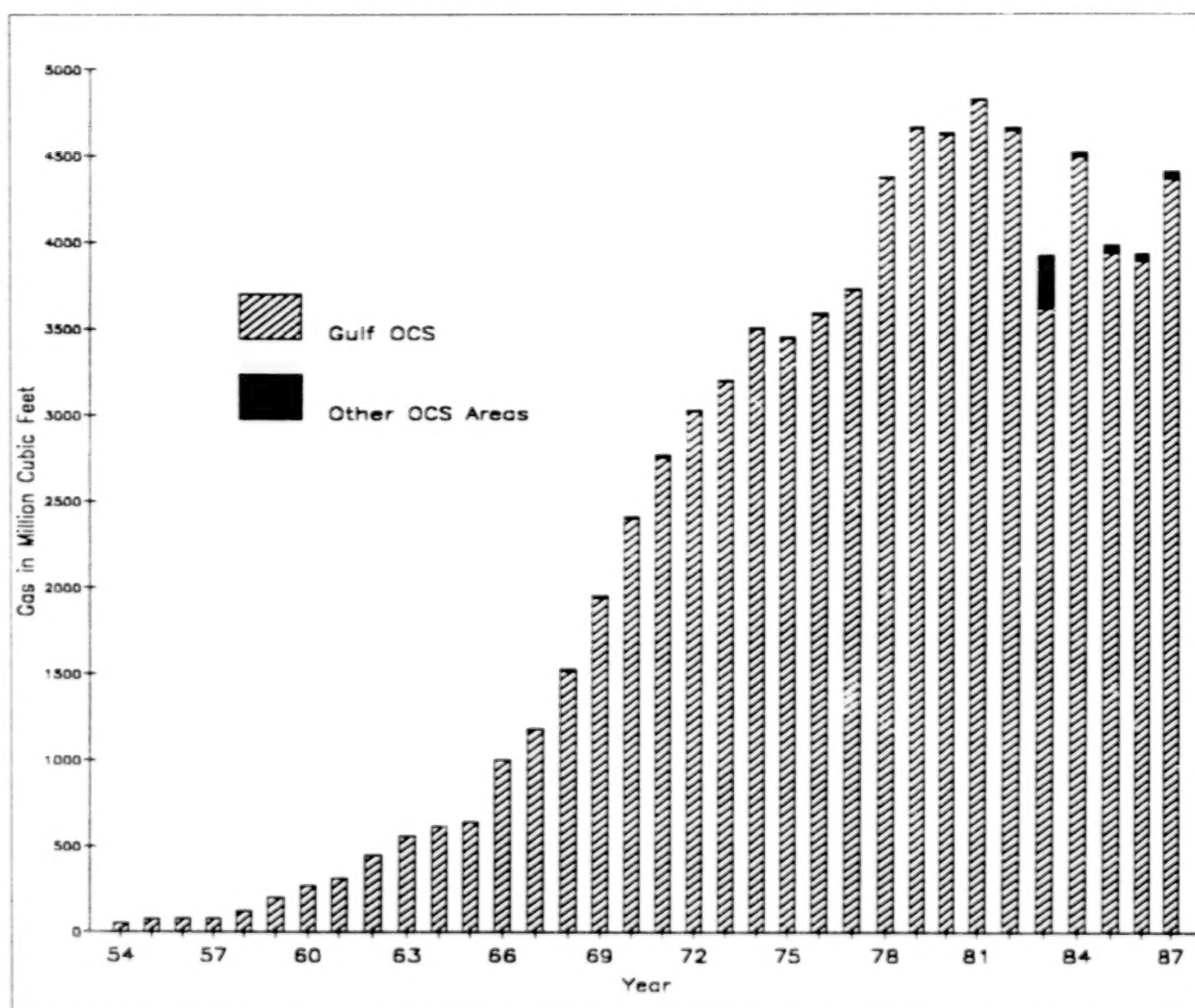


Figure 7.--National gas production from the OCS, 1954-1987, showing relative proportions produced from the Gulf of Mexico and other OCS areas.

Production Phase of Postlease Activities

continued

Mexico. The only other OCS area currently in production is offshore Southern California. Natural gas production from the Gulf has declined in recent years, perhaps in response to a market that is currently oversupplied. After declining during the late 1970's, production of crude oil and condensate from the Gulf of Mexico, and from other OCS areas, has risen to near its all time high. Coincidentally, this rise has taken place during a period in which oil prices have declined markedly.

Additional Readings

Carpenter, George, and others. 1987. *Sulphur & Salt Leasing: Summary of Issues, Gulf of Mexico Outer Continental Shelf*. OCS Report MMS 87-0036. Available from Technical Publications Unit, Minerals Management Service, 1951 Kidwell Drive, Suite 601, Vienna, VA 22180; (703) 285-2604.

Minerals Management Service. 1987. *Proposed Central Gulf of Mexico Sulphur/Salt Lease Sale: Environmental Assessment*. OCS EIS/EA MMS 87-0034. Available from Public Information Unit, Gulf of Mexico OCS Region, Minerals Management Service, 1201 Elmwood Park Blvd., New Orleans, LA 70123; (504) 736-2519.

Office of Technology Assessment. 1987. *U.S. Oil Production: The Effect of Low Oil Prices*. For information on availability of either the full report or summary report call the Office of Technology Assessment Publication Request Line (202) 224-8996.

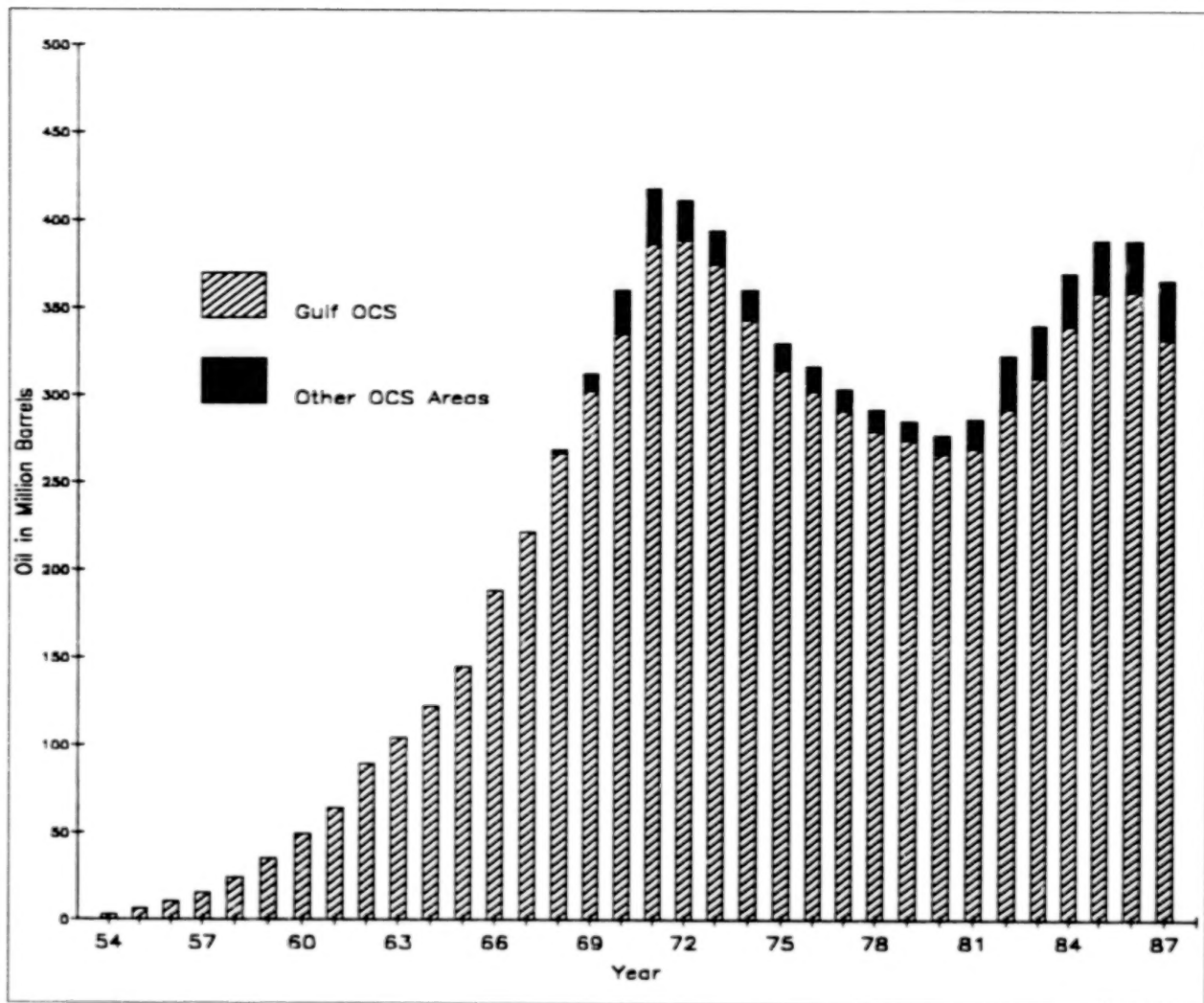


Figure 8.—National oil and condensate production from the OCS, 1954-1987, showing relative amounts produced in the Gulf and in the other OCS areas.

30 CFR Parts 250 and 256

On April 1, 1988, the final rule that consolidated into one document the existing multitier rules of the Offshore Program of the MMS was published in the Federal Register (53 FR 10596). This final rule governs all oil, gas, and sulphur exploration, development, and production operations in the OCS. The MMS laid out the following objectives in developing this rule:

- 1) To restructure and consolidate the past lease operating requirements placed upon OCS oil, gas, and sulphur lessees into a single document;
- 2) To establish performance standards in preference to detailed technical standards to the extent that protection of the environment and safety of operations permit;
- 3) To update safety and environmental requirements, recognize needs identified by technological advances, improve operating practices and experience;
- 4) To eliminate unnecessary reporting and recordkeeping requirements; and
- 5) To clarify and simplify the language of the rule and eliminate redundant and inappropriate provisions.

The current rule at 30 CFR 250 now contains the revised previous edition of 30 CFR 250, the individual OCS Orders developed to govern operations conducted in each of the four MMS OCS Regions and portions of selected Notices to Lessees and Operators previously issued by MMS in each of the OCS Regions.

Further information on this consolidated rulemaking is available by writing or telephoning

Branch of Rules Orders and Standards
Minerals Management Service, MS-646
12203 Sunrise Valley Drive
Reston, VA 22091
(703) 648-7816

In a related effort, the MMS Office of Offshore Information and Publications recently made available its publication entitled, *Compilation of OCS Regulations Related to Mineral Resource Activity on the Outer Continental Shelf*. This loose-leaf publication compiles into one document most of the Federal regulations that affect development of the mineral resources of the OCS. For further information on, or for copies of, this publication contact

Documents Distribution Officer
Office of Offshore Information and Publications
Minerals Management Service, MS-642
1951 Kidwell Drive, Suite 601
Vienna, VA 22180
(703) 285-2280

Lease Terms

Effective December 30, 1985, the Department of the Interior revised its policy on lease terms (50 FR 49041). This revised policy established a new category of leases that carry a primary lease term of 8 years. This policy revision was instituted to compensate offshore operators for the increased expense and time required for exploration of deepwater leases.

Currently, all leases let in water depths of up to 400 meters (1,312 ft) carry a primary term of 5 years; leases let in water depths of from 400-900 meters (1,312-2,953 ft) carry a primary term of 8 years; and all leases let in water depths greater than 900 meters (2,953 ft) carry primary terms of 10 years.

All leases let in water depths between 400 and 900 meters carry a primary term of 5 years with a right of automatic extension to 8 years upon the spudding of an exploratory well within the first 5 years. The exploratory well must be drilled to the depth, and according to other criteria, established in an approved exploration plan.

3. Postproduction Transportation and Facilities

Offshore Pipeline Network and Major New Projects

Including both State and Federal waters, the Gulf of Mexico contains the most extensive offshore pipeline network in the world. Approximately 64 percent of all Gulf of Mexico OCS pipelines are located in the Central Gulf of Mexico Planning Area. The remaining 36 percent are in the Western Gulf Planning Area. Currently, there are no pipelines in the Eastern Gulf Planning Area. Figure 9 shows the number and total mileage of pipeline projects approved by MMS for the period 1983 to April 1988.

Central Gulf of Mexico Planning Area

One major pipeline project that would bring deep-water production onshore is Placid Oil Company's Green Canyon project on block 29. This project involves a floating/subsea production system. In January 1988, Placid experienced a scheduling setback when the 10-mile pipeline bundle being towed to their production site apparently snagged on an obstruction in about 950 feet of water. Some of the pipeline segments floated to the surface while the remainder settled to the seabed. Estimates range from 5 months to a year before the pipeline can be salvaged, repaired, towed back to the production site, and production commences. Production was scheduled to begin in early March 1988.

The world's deepest water production pipeline will be installed in the Green Canyon OPD. The 12-inch diameter by 7.5-mile pipeline will be laid by McDermott and will link Shell's Bullwinkle platform in block 65 to the Boxer platform in block 19.

Western Gulf of Mexico Planning Area

In the Western Gulf of Mexico Planning Area, a major new gas pipeline (the Cavallo line) has begun deliveries from Amoco Production Company's Matagorda Island block 519 off Texas to connections with Houston Pipe Line Company and Seagull Shoreline System at Oyster Lake, Texas. This gas system will be capable of transporting 150 MMcfd, but is expected to transport 50 MMcfd in the first

part of 1988. A planned onshore extension will run from Oyster Lake to Amoco's 175-MMcfd "Old Ocean" gas processing plant at Old Ocean, Texas.

Eastern Gulf of Mexico Planning Area

A project currently proposed for the Eastern Gulf of Mexico Planning Area entails the construction of a 392-mile offshore segment of a 608-mile gas transmission line transporting gas from offshore leases in Alabama's Mobile Bay across the OCS to a landfall north of Tampa, Florida, and on into central Florida gas markets. This proposal, called the Sunshine Natural Gas System, sponsored by Coastal Corporation, is one of three proposals before the Federal Energy Regulatory Commission (FERC) to transport Mobile Bay gas to two different markets. The \$470 million Sunshine line, if approved, is scheduled for completion in late 1991 with a planned capacity of 450 MMcfd. Coastal Corporation is currently trying to negotiate sales contracts with Florida utilities.

The other two proposals are strictly onshore gas transmission lines. The first is a proposal by Transcontinental Gas Pipe Line Company or Transco to transport gas from Mobil Oil Company's offshore Mary Ann field in Alabama State waters to Mobil's gas processing facility, and then north to central Alabama markets. The Transco line's initial capacity will be 250 MMcfd without compression. As production from the Mobile Bay gas trend expands, the line will be able to transport 950 MMcfd through compression. Mobil currently has a 15-year contract with Transco who, in turn, has a 15-year distribution contract with Alabama Gas Corporation. Transco has completed the construction of the first Mobile Bay pipeline hookup, and the gas gathering system is in place.

The second gas transmission proposal is by the Citrus Corporation, which is jointly owned by Enron Corporation and Sonat, Inc. calls for a 50-mile pipeline from Bayou La Batre, Alabama, north to a connection with a Florida Gas Transmission Company pipeline. This proposal competes for the same central Florida market as the Sunshine Natural Gas System. The Citrus line is estimated to cost \$32.4 million and will transport 550 MMcfd without

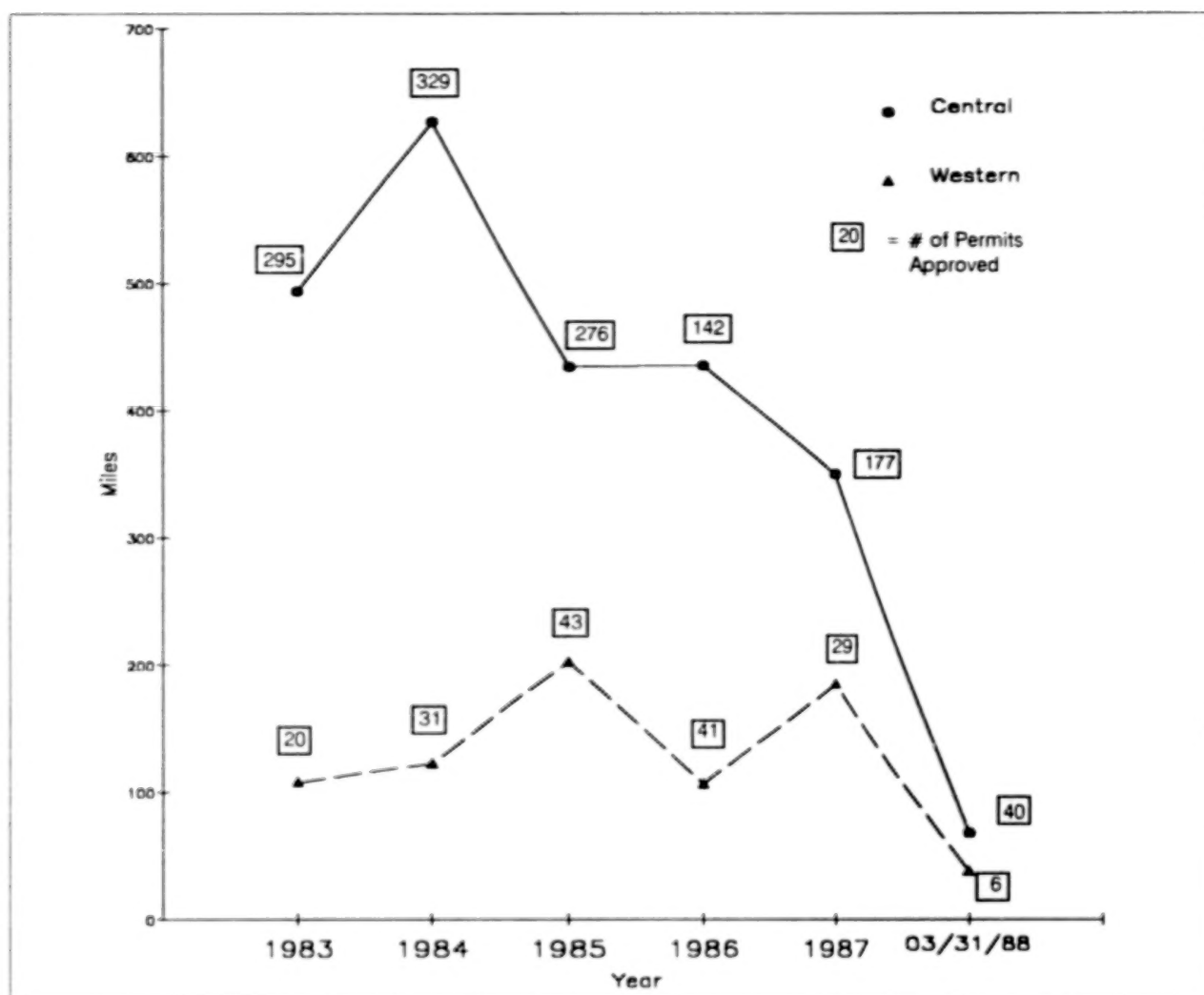


Figure 9.--Pipeline projects approved by MMS and total mileage, 1983 through March 1988.

Eastern Gulf of Mexico Planning Area *continued*

compression, and more than 900 MMcf/d with compression. It is doubtful whether FERC will approve all three of these transmission lines.

The Mobile Bay area is also the site for a proposed gas gathering system. Six companies have joined forces to lay and operate this gas gathering system. Two of the six partners are Enron Corporation and Sonat, Inc. who are also involved in the proposed onshore Citrus line. All partners have exploration and production affiliates with large leaseholdings in the area. Enron will operate the system and market the gas. The first phase of the system calls for a 33-mile, 24-inch gathering trunk line with another 48 miles of varying diameter lateral pipeline. Production will be sent to a gas compression and dehydration

plant at Bayou La Batre, Alabama. The expected cost for the first phase is between \$60 and \$65 million. From the Bayou La Batre plant, the gas will enter the Citrus line for final distribution in central Florida. The exploration and production affiliates of the owners have signed gathering contracts to connect their production to the gas gathering system. Negotiations for gathering commitments from third party reserves are also underway with operators in the Viosca Knoll, Chandeleur, and Mobile OPD areas in Federal waters.

Another gas gathering system is proposed for the Mobile Bay area by Exxon. Like the Mobil gathering system, Exxon's will be dedicated to production from its leases within Mobile Bay and from Federal leases

bordering Alabama State waters. The project could produce as much as 600 MMcf/d from 5 production platform complexes and 22 satellite well structures. Exxon has shelved its plans for the construction of this gathering system until gas prices improve.

Vessel Transportation

Shipping-Safety Fairways and Anchorages

The 1978 Port and Waterways Safety Act (33 U.S.C. 1223 and 1224) requires the U.S. Coast Guard (USCG) to provide passageways for voluntary use by merchant marine vessels as they approach U.S. ports by employing shipping-safety fairways, traffic separation schemes, precautionary zones, and anchorage areas. In the Gulf of Mexico, the USCG from time to time conducts port access route studies to determine if changes to existing shipping safety fairways and anchorages are necessary.

On September 8, 1986, the USCG proposed an amendment to its Safety Zone Regulations (33 CFR Part 165) in the *Federal Register* (51 FR 31958). This amendment would disestablish a safety zone in the Mississippi River gulf outlet. Improvements to the navigational channel since the safety zone's establishment in June 1981 and the Army Corps of Engineers ability to deal quickly with critical shoaling have made this safety zone unnecessary. It is believed that the elimination of this safety zone will be the shipping industry and the Port of New Orleans economically by providing more efficient sailing schedules.

The USCG published a final rule (33 CFR Part 166) in the *Federal Register* (52 FR 18231) on May 14, 1987, that establishes a new shipping-safety fairway in the vicinity of Heald Bank in the approach to Galveston, Texas. This action was necessary to permit deep-draft vessels to navigate safely around the area off Heald Bank Shoals. This rule will provide a corridor free from fixed offshore structures. This final rule implements the results of a port access route study published in the *Federal Register* on March 11, 1985 (50 FR 9682).

Recent U.S. Coast Guard Port Access Route Studies

Two port access route studies have been undertaken by the USCG since the publication of the previous Gulf of Mexico Summary/Index Report. The first study is for the approach to Freeport, Texas (52 FR 25039, July 2, 1987). The intent of this study is to determine if a modification to the existing fairway anchorages is necessary. The second port access route study is at the stage of a proposed rule that would eliminate the Southern Tampa fairway anchorage area and would establish a new fairway anchorage area in the approach to Tampa Bay, Florida (52 FR 28019, July 27, 1987). The new fairway anchorage area is intended to increase navigation safety by providing an anchorage area contiguous to and associated with the Tampa Shipping Safety Fairway. This action would permit deep-draft vessels to anchor safely in the approach to Tampa Bay.

Onshore Support Industries

Service and Supply Industries

As in other sectors, the offshore service and supply industry was adversely affected by the relatively gradual decline in oil prices from 1982 to 1985 and then a more severe decline from 1985 to 1986. During this period, many of the support industries adopted survival policies regarding their business activities, and only recently have the companies shifted to recovery policies. Initially, company staffs were reduced and company stockpiles of goods were allowed to reach low levels. Now, as the service and supply industry prepares for increased drilling activity, the companies may be reluctant to produce large stockpiles of goods without sufficient compensation and assurances that a higher level of activity will occur in 1988. In addition to potential equipment and supply shortages, specialized personnel shortages are also beginning to show. The technology has changed somewhat since the early 1980's, and it is going to take time to train people to use the new technology. For example, computers are now being used much more widely by mud engineers than they were in 1982 and advances in drilling technology call for a more specialized operator.

Service and Supply Industries *continued*

Although utilization rates for service and supply vessels have been reported to be high these rates, data does not account for those boats that are still laid up. Currently, companies have little capability to replace older vessels because of the relatively low amount of cash generated internally. The effects of this low amount of available capital means there is little financial capacity to produce state-of-the-art vessels. These effects of low capital come at a time when deep-water exploration and development is increasing, and with this, the demand for high horsepower boats is also increasing. High horsepower vessels are currently in limited supply. To

compound the situation, many companies over the past 2 years have been using spare boats as a source for parts resulting in an enormous repair expense to activate the entire fleet of vessels.

Fabrication

The offshore construction industry was particularly hard hit by the decline in oil prices in 1985 and 1986. As table 10 indicates, over the past year and a half the industry has undergone a transformation whereby smaller construction firms were bought out or went bankrupt, while the major firms trimmed staff, reorganized, and redirected their production efforts

Table 10.—Gulf of Mexico regional platform component fabrication facilities as of April 1988

Location	Firm	Status
Texas		
Beaumont	Bethlehem Steel	Corporate commitment to leave
Brownsville	Marathon-LeTourneau	Refurbishing semi's top production platforms/ heavy steel fabrication
Channelview	Design Research (formerly Vemar)	Components
Houston	Brown and Root	Components
Houston	Offshore Pipelines Inc.	Components & refurbished salvaged platforms
Ingleside	Baker Marine	Dormant
Ingleside	Gulf Marine Fabricators	Components & Jackets
Port Aransas	Brown and Root	Dormant
Louisiana		
Baldwin	Superior Fabricators	Components & Jackets
Belle Chase	Brown and Root	Components & Jackets
Harvey	Avondale Shipyards, Inc.	Closed
Harvey	McDermott, Inc.	Closed
Harvey	Williams McWilliams Co.	Closed
Houma	Gulf Island Fabricators	Components & Jackets
Lafayette	Teledyne Offshore, Inc.	Closed
Marrero	Watts Fabricators	Closed
Morgan City	Apex Offshore	Closed
Morgan City	Avondale Shipyards, Inc.	Components & Jackets
Morgan City	Brown and Root	Closed
Morgan City	McDermott, Inc.	Components
Morgan City	Service Machine Group	Closed
New Iberia	Universal Fabricators	Components & Jackets
Port St. Mary	Twin Brothers	Components & Jackets
Mississippi		
Pascagoula	Ingalls Shipbuilding	No Offshore Fabrication
Vicksburg	Marathon-LeTourneau	Self-elevating mobile offshore drilling units/ heavy steel fabrication

SOURCE: Janis Jamieson, 1988, Offshore Data Services, Houston, Texas, March, oral communication.

to different or more specialized markets.

However, not all changes in response to the price drop were administrative. The construction industry pressed on and developed new technology in deep-water production, which resulted in compliant towers, floating production systems, and subsea production systems. Furthermore, the compliant tower, which uses less steel than traditional structures and thereby reduces costs, could also be used in shallow waters. This capability is causing some of the previously considered uneconomic shallow-water fields to be reassessed. Additionally, fabrication yards are becoming more automated and are streamlining their production process, thus cutting production costs

further. Advances in heavy-lift capability will also contribute to savings.

Refinery and Gas Processing Capacity

Many of the refineries seized the opportunity of diminished operating capacity brought on by the early crude oil price declines in the early 1980's to revamp their manufacturing processes in an attempt to reduce production costs. An increased demand for unleaded gasoline and higher octane gasoline also caused refinery operators to upgrade their equipment. Many refineries were shut down at the end of 1987, while others were kept relatively busy because

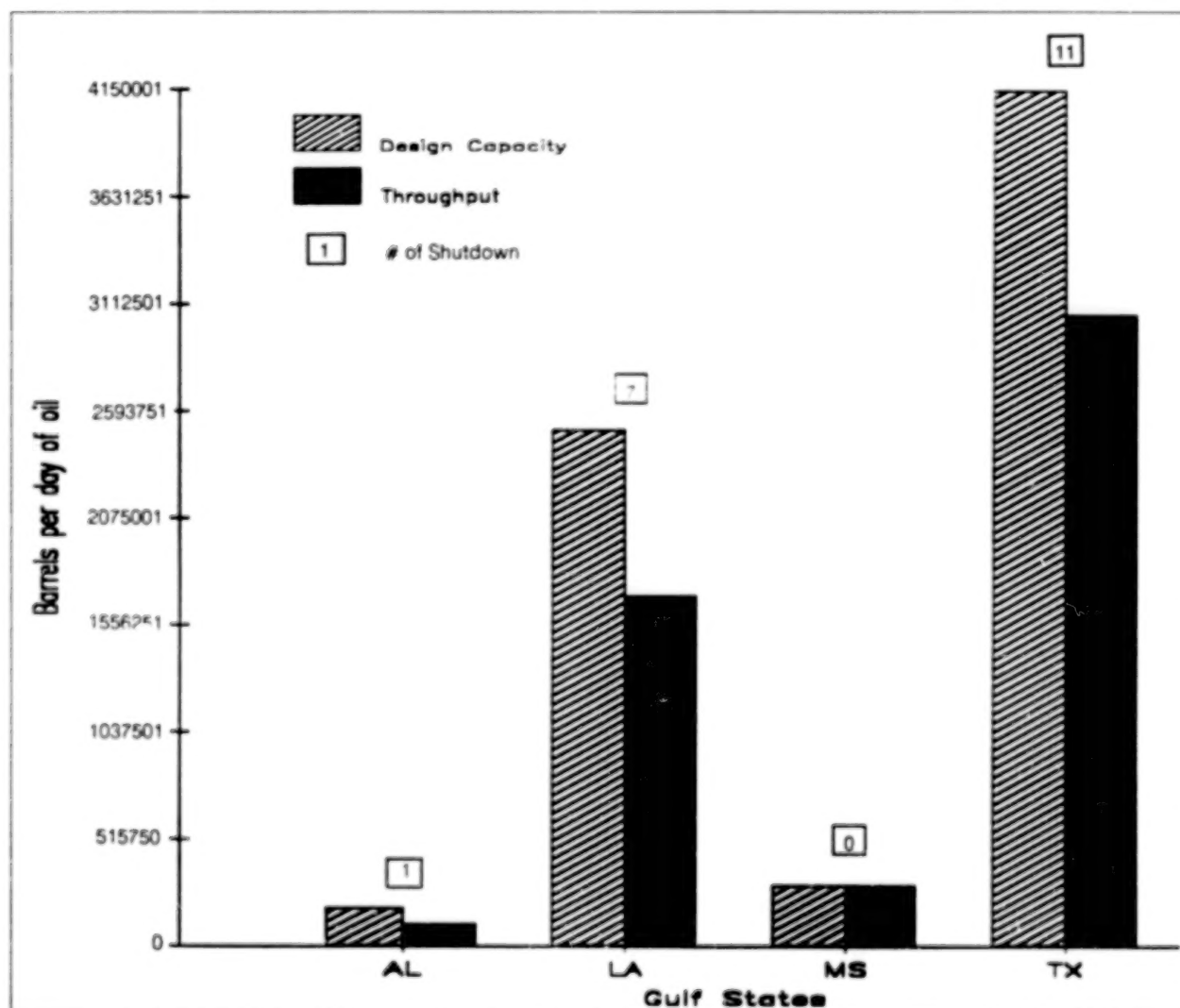


Figure 10.—Design capacity, throughput, and number of shut-down Gulf of Mexico coastal oil refineries, by State, as of December 31, 1987.

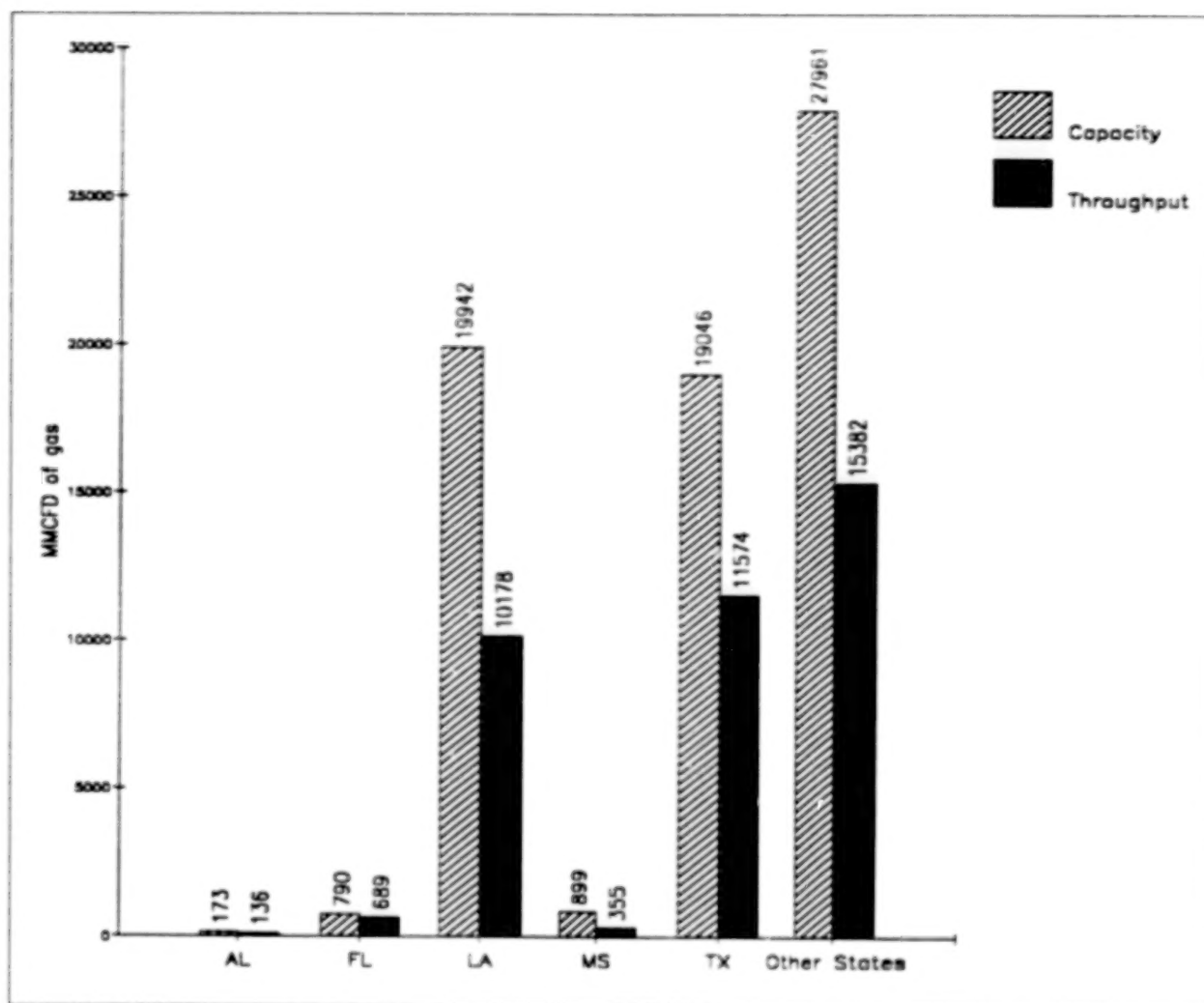


Figure 11.—Gulf of Mexico regional area gas processing capacity and throughput compared with all other States as of December 1987.

Refinery and Gas Processing Capacity *continued*

of the lower feedstock prices caused by the decline in the price of oil. Figure 10 shows the design capacity and utilized capacity in barrels of oil per day of coastal refineries in the Gulf of Mexico region and the number of refineries shut down as of December 31, 1987. In this case, shut-down refineries are still available for future production.

The utilized refining capacity is the amount that a refinery processed on December 31, 1987. Texas and

Louisiana represent about 93 percent of the Gulf Coast refinery design capacity. This percentage has remained relatively constant for several years. The Gulf of Mexico region boasts the largest gas processing capacity in the Nation. As shown in figure 11, Texas and Louisiana provide over 95 percent of the Gulf region's gas processing capacity. In terms of throughput, the five Gulf of Mexico States are equally impressive, providing 60 percent of total U.S. gas throughput.

4. Issues Related to the Exploration and Development of OCS Resources

Numerous issues relate to the exploration and development of OCS oil and gas resources. This chapter reviews several of these issues and provides the reader with contacts for follow-up inquiries and with citations of related materials in the "Additional Readings" section at the end of this chapter.

Rigs-to-Reefs Program

As reported in the previous edition of this report, there is growing interest in using obsolete oil and gas structures for the forming of artificial reef habitats. The Secretary of the U.S. Department of Commerce issued the *National Artificial Reef Plan* during November 1985 in accordance with a mandate from the National Fishing Enhancement Act of 1984 (33 U.S.C. 2103). This Plan sets out national policy regarding artificial reefs, including obsolete oil and gas structures, and provides guidance to government and private concerns regarding the design, siting, permitting, construction, and management of artificial reefs. The Plan specifically encourages the development of State and local artificial reef plans that incorporate specific criteria that account for local conditions.

Each of the coastal States in the Gulf of Mexico region is active in developing local plans and in the permitting and siting of artificial reefs. Because of the maturity of this oil and gas province, numerous related structures are becoming obsolete. Figure 12 illustrates the yearly number of oil and gas structures in the Gulf of Mexico that are either installed or removed. In accordance with domestic and international regulations, inactive structures must be removed to avoid impeding navigation. Currently, most of these structures are removed from the seabed and hauled ashore for salvage as scrap. In recent years, however, the value of these structures as artificial habitat for marine flora and fauna has been widely recognized. Accordingly, a significant focus of many of the Gulf of Mexico region coastal States' artificial reef plans involve the siting of oil and gas structures. Table 11 lists existing and permitted rigs-to-reefs projects on the Gulf of Mexico OCS.

Since the previous edition of this report, several noteworthy events have occurred. The U.S. Army Corps of Engineers published a final rule on the permitting of domestic artificial reefs on November 13, 1986 (51 FR 41206). Additionally, in November 1987, the International Conference on Artificial Fisheries Habitat was convened. A special session of this conference focused on the rigs-to-reefs topic. During 1988, the MMS will publish the proceedings of this special session.

The International Maritime Organization met during January 1987 to discuss the need for international standards applicable to the removal of offshore installations and structures. The MMS, in concert with the USCG, the U.S. Department of State, and others, has worked to develop a coordinated position to address this need. The current U.S. position would require the removal of all but 2 percent of such structures; the remaining 2 percent would be allowed to be left in place.

In Louisiana, the Louisiana Fishing Enhancement Act was signed into law on July 1, 1986. This law established a State Artificial Reef Program and required the development of a plan covering both State and Federal waters off the Louisiana coast. The Plan, approved by the State Legislature in June 1987, established eight artificial reef planning areas on the OCS, offshore Louisiana. The first reef to be established under this program was donated by Cities Service and installed on the OCS in the South Marsh Island administrative area of the MMS during 1987.

In Texas, the Senate Natural Resource Committee and the House Committee on Environmental Affairs recently held public hearings on the necessity of developing a State program on the siting of artificial reefs. In Florida, several coastal counties are developing artificial reef siting plans.

Rigs-to-Reefs Program *continued*

For further information on the various rigs-to-reefs projects nationwide, see the "Additional Readings" section at the end of this chapter or contact the following agency:

Artificial Reef Development Center
Sport Fishing Institute
1010 Massachusetts Ave., NW., Suite 100
Washington, DC 20001
(202) 898-0770.

Control of Offshore Drilling Wastes

Exploration for and the development and production of oil and gas, both onshore and offshore, generate

various waste streams. The Federal Government is responsible for regulating these waste streams and thereby protecting public resources and health. Discharge of wastes from oil and gas facilities on the OCS is regulated by the Environmental Protection Agency (EPA) through its National Pollutant Discharge Elimination System (NPDES) permits. Recently, the EPA has decided not to characterize wastes generated by the oil and gas industry as hazardous. NPDES and hazardous wastes issues are discussed in more detail below.

National Pollutant Discharge Elimination System

All discharges from oil and gas exploration, development, and production facilities on the Gulf of Mexico

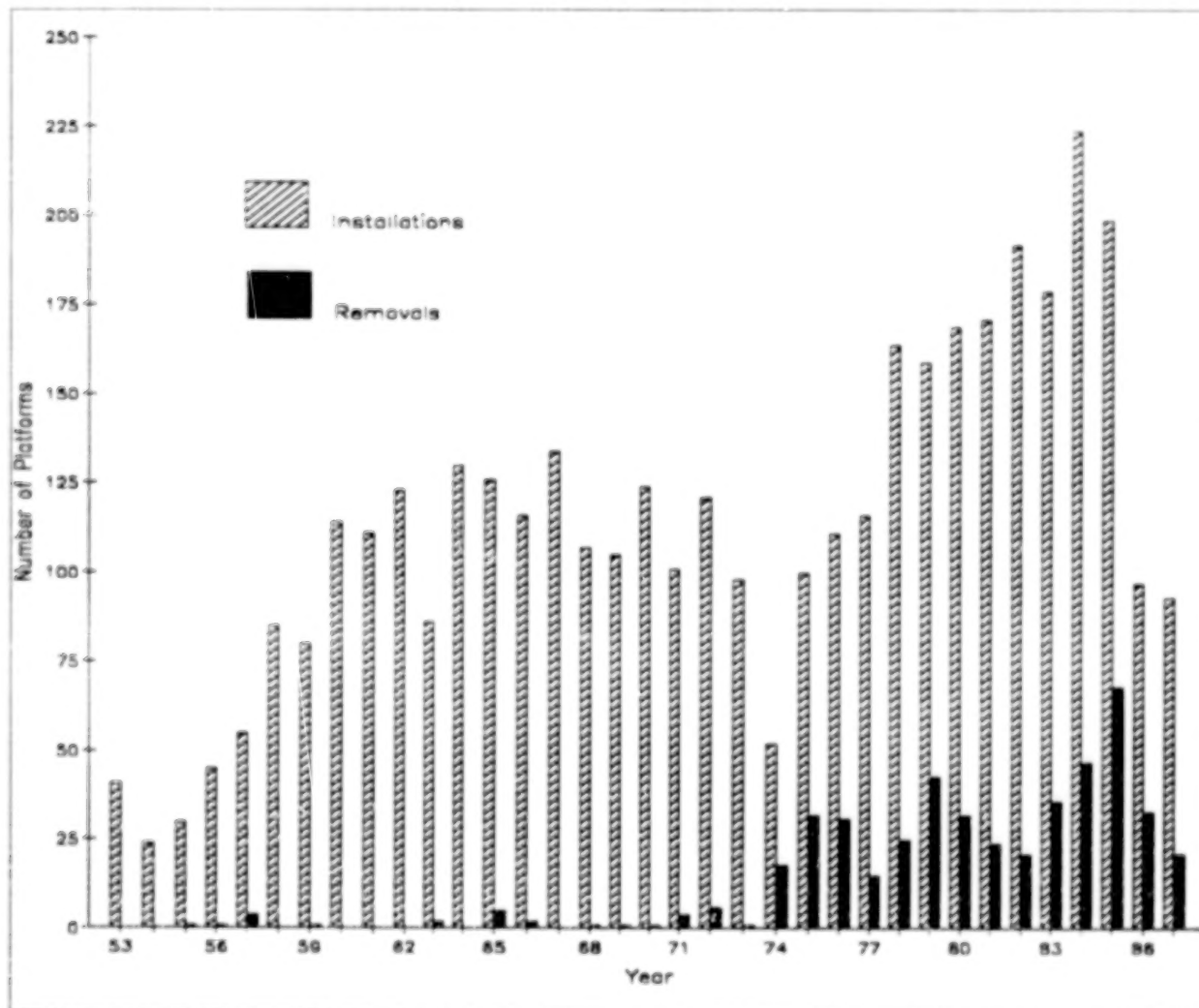


Figure 12.—Yearly installations and removals of offshore production platforms on the Gulf of Mexico OCS, 1953-1987.

Table 11.--Existing and permitted rigs-to-reefs projects on the Gulf of Mexico OCS through April 1988

Reef Identification	Planning area	Reef location(2)	Water depth (ft)	Distance to shore (miles)	Former owner or donor	Reef sponsor	Year added
Topper III Reef(1)	Western	High Island(2) A-471	196	89	Zapata	Mobil Oil	1977
Tower S Reef	Eastern	Apalachicola 686	126	25	Exxon	Florida Dept. of Natural Resources	1979
Arco Reef(1)	Western	North Padre Is. 985 and 980	97	18	Dixilyn Field 81	Arco	1981
Pensacola Reef	Eastern	Pensacola 983	175	22	Tenneco	Florida Dept. of Natural Resources	1982
Marathon Reef	Eastern	Destin Dome 486	240	50	Marathon	Alabama Dept. of Conservation and Natural Resources	1983
Penrod Reef(1)	Western	Matagorda Is. 657	68	12	Penrod	Penrod	1983
Panama City Reefs Stage 1	Eastern	Pensacola 1006	100	12	U.S. Navy	Bay County, Florida	1984
Stage 2	Eastern	State waters	60	3	U.S. Navy	Bay County, Florida	1984
Tenneco Reef	South Atlantic(3)	State waters	1 - 400	1.5	Tenneco	Florida Dept of Natural Resources	1985
Shelter Reef	Central	South Marsh Is. 146	240	90	Cities Service	Louisiana Dept. of Wildlife & Fisheries	1987
Permitted Artificial Reef Sites Awaiting Oil and Gas Structures							
South Padre Island Reef	Western	South Padre Is. 1070	95	15	--	State of Texas	
Port Arkansas Reef	Western	Mustang Island 802	110	18	--	State of Texas	
Matagorda Bay Reef	Western	Matagorda Is. 616	108	21	--	State of Texas	
Freeport Site Reef	Western	Galveston A-22	100	30	--	State of Texas	
Rio Grande Artificial Reef	Western	State waters	72	7	--	Port Isabelle & South Padre Is. Artificial Reef Committee	
Okaloosa site	Eastern	Pensacola 942	354	22	--	Okaloosa County, FL	
Pinellas site	Eastern	--	--	--	--	Pinellas County, FL	
(Unnamed)	Central	Main Pass 165	130 - 165	60	--	Mississippi Gulf Fishing Banks, Inc.	

(1) Resulted from accidental sinking of a drilling rig.

(2) OCS administrative area and block number, or "State waters."

(3) The only rigs-to-reefs project nationwide not located in the Gulf of Mexico.

SOURCE: Villere C. Reggio, 1988, MMS Gulf of Mexico OCS Region, February, personal communication.

National Pollutant Discharge Elimination System *continued*

ment, and production facilities on the Gulf of Mexico OCS are regulated by the EPA under the terms of its general NPDES permit (GMG 280000) promulgated on July 9, 1986 (51 FR 24897). This permit establishes relevant effluent limitations, prohibitions, reporting requirements, and other conditions. The EPA published the draft version of this general permit, together with a detailed fact sheet and supplementary information--sections of which were incorporated in the final rule by reference, on July 26, 1985 (50 FR 30564).

The current general NPDES permit bans any discharge of oil-based and inversion emulsion drilling fluids or cuttings derived from these fluids. All of these fluids and cuttings are barged to shore for land disposal. In order to promote the development of cuttings treatment technology, however, the EPA has issued two demonstration permits to Conoco Inc. on March 31, 1987 (52 FR 10262). Under these permits a new technology for removing oil and grease from drill cuttings from oil-based and inversion emulsion drilling fluids is being evaluated. The EPA may modify its general permit if the results of these demonstration permits show that the technology removes oil and grease to acceptable levels.

Discharge of less toxic water-based drilling fluids is regulated on the basis of the best available technology. Because current technology does not allow the removal of all regulated toxics, this category of drilling fluids is regulated according to the toxicity of any proposed discharge. Toxic fluids must still be barged ashore for disposal. Less toxic fluids are allowed to be discharged if they can meet an EPA established toxicity limitation test. Effective on August 29, 1986, however, the EPA suspended the toxicity limitation tests until December 31, 1986, because of a shortage of the requisite bioassay test organism (51 FR 33130).

For further information on the NPDES program, contact the offices listed below. Region VI of the EPA administers the NPDES for the OCS offshore Texas and Louisiana, and Region IV administers this program for offshore Mississippi, Alabama, and Florida.

Water Management Division
U.S. Environmental Protection Agency
Region VI
1445 Ross Ave.
Dallas, TX 75202
(214) 655-7100

Water Management Division
U.S. Environmental Protection Agency
Region IV
345 Courtland St., NE
Atlanta, GA 30365
(404) 347-7554

Resource Conservation and Recovery Act

When Congress passed the Resource Conservation and Recovery Act (RCRA), it temporarily exempted drilling fluids, produced waters, and other wastes associated with exploration, development, and production of oil, gas, and geothermal energy. The EPA was, however, directed to study the adverse effects of these wastes on human health and the environment and report back to Congress on whether or not these wastes should be regulated under RCRA as hazardous (42 U.S.C. 6982(m)).

On January 4, 1988, the EPA published a notice of availability of this report and of public hearings on the report (53 FR 81). In this report, EPA recommended to Congress that the wastes from the oil and gas and geothermal industries were regulated sufficiently to protect human health and the environment and did not merit full regulation as hazardous wastes. Further information on this subject can be found in the EPA report cited in the "Additional Readings" section at the end of this chapter.

Coastal Zone Management

Coastal Zone Management Act Reauthorization

Public Law 99-272, signed into law on April 7, 1986, provided for a 5-year reauthorization of the Coastal Zone Management Act (CZMA) of 1972, as amended (16 U.S.C. 1451 et seq.). In reauthorizing the Act, Congress enacted a provision that reduces administrative grants provided by the Federal Government to the States. During fiscal years 1986, 1987,

and 1988, the Federal to State ratio of funding for administration of State coastal management programs was 4 to 1, 2.3 to 1, and 1.5 to 1, respectively. Over the remaining life of the reauthorization, a ratio of 1 to 1 will be maintained. The reauthorization language also amended section 306(g) and now requires States to promptly notify, and submit for approval by, the Secretary of Commerce any proposed amendment, modification, or other program changes. In return, the Secretary is now obligated to respond to such proposed changes within 30 days of their receipt, or within 120 days of receipt if an extension is required. Extensions for Secretarial review beyond 120 days are authorized only for purposes of compliance with NEPA (42 U.S.C. 4321 et seq.). The Office of Ocean and Coastal Resource Management within National Oceanic Atmospheric Administration, which administers the CZMA for the Secretary of Commerce, has announced that it will develop and publish regulations to implement the reauthorization language. For further information on the national Coastal Zone Management Program or on the status of the various State programs, contact the following office:

Office of Ocean & Coastal Resource Management
National Oceanic & Atmospheric Administration
1825 Connecticut Ave., NW.
Washington, DC 20235
(202) 673-5115.

Relationship to National Energy Security

The Office of Ocean and Coastal Resource Management is currently conducting a study to identify successful permit simplification efforts being undertaken by coastal States in administering their coastal management programs. The results of this study will be used to make recommendations to coastal States on ways to improve their permit processing. The scope and intent of this study were outlined in a Federal Register notice issued on April 17, 1987 (52 FR 12579). The study itself stems from a Presidential directive promulgated on June 6, 1986, that among other things directed the Secretary of Commerce to review State coastal management programs in an attempt to advance the national interest in energy security. It is anticipated that the Office of Ocean and Coastal Resource Management will complete this study during 1988.

Marine Sanctuaries

Previous editions of this report have detailed the development and status of the national marine sanctuaries program administered by NOAA. The regulations promulgated by NOAA that detail the program are located at 15 CFR 922 and their legislative mandate is located at 16 U.S.C. 1431 et seq.

At present, there are no established marine sanctuaries in the Gulf of Mexico. However, NOAA is, preparing the necessary documentation for sanctuary designation of the East and West Flower Garden Banks. The Flower Garden Banks represent the northernmost shallow-water tropical coral-reef community in the Gulf of Mexico. The proposed sanctuary is located 115 miles south of Galveston, Texas, and encompasses approximately 44 square miles.

This site was nominated for status as an active candidate for sanctuary designation on August 2, 1984 (49 FR 30988). The NOAA anticipates that the draft environmental impact statement and management plan for the proposed Flower Garden Banks Marine Sanctuary will be available for public review and comment during the summer of 1988. For further information on this proposed sanctuary or on the national program, contact the following office:

Marine & Estuarine Management Division
National Oceanic & Atmospheric Administration
1825 Connecticut Ave., NW., Suite 714
Washington, DC 20235
(202) 673-5126.

Section 8(g) Revenue Distribution

In 1978, the U.S. Congress established a buffer zone on the federally controlled OCS adjacent to State controlled portions of U.S. offshore submerged lands in order to compensate the coastal States for the possibility of transboundary oil and gas resources. The 8(g) zone, named after the provision of the law that established it, extends 3 nautical miles seaward of the State-Federal offshore boundary.

As amended, section 8(g) of the OCS Lands Act (43 U.S.C. 1337 (g)) provided that 27 percent of the

Section 8(g) Revenue Distribution *continued*

escrowed bonuses, rents, and royalties derived between September 1978 and October 1986 from Federal OCS leases in the 8(g) zone be distributed to the coastal States adjacent to those leases. In addition, Section 8(g) requires the MMS to make monthly payments to these same States on the basis of current revenues from the 8(g) zone.

According to the legislation that established Section 8(g), the coastal States affected also will be allocated an additional \$650 million over a 15-year period: 3 percent for the first 5 years, 7 percent for the next 5 years, and 10 percent for the last 5 years. The amounts that have been disbursed by MMS to each of the Gulf Coast States--including the initial distribution from the escrow account, the first installment payment, and monthly payments through April 1988--are itemized by State below:

Alabama.....	\$ 66,690,271
Florida.....	30,419
Louisiana.....	665,407,611
Mississippi.....	14,152,456
Texas.....	\$ 447,901,790

U.S. Environmental Protection Agency. 1988. *Report to Congress: Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy*. Available for purchase through the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161; (703) 487-4650.

Additional Readings

Minerals Management Service. 1987. *Programmatic Environmental Assessment: Structure Removal Activities, Central and Western GOM Planning Areas*: OCS EIS/EA MMS 87-0002. Available from the Public Information Unit - OPS 3-4, Minerals Management Service, 1201 Elmwood Park Blvd., New Orleans, LA 70123-2394; (504) 736-2519.

National Oceanic and Atmospheric Administration. 1985. *National Artificial Reef Plan*; NOAA Technical Memorandum NMFS OF-6. Available from the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Washington, DC 20235.

Reggio, V. C., 1987. *Rigs-to-Reefs: The Use of Obsolete Petroleum Structures as Artificial Reefs*: OCS Report MMS 87-0015. Available from the Public Information Unit - OPS 3-4, Minerals Management Service, 1201 Elmwood Park Blvd., New Orleans, LA 70123-2394, (504) 736-2519.

Ryan, P. R., ed., 1988. *U.S. Marine Sanctuaries: A Special Issue*; 31 *Oceanus* (1), 96 pp., Woods Hole Oceanographic Institution, Woods Hole, MA.

Appendix: Bibliography of OCS Information Reports

The following is a regional listing of documents published by the OCS Information Program. Entries are arranged by title in reverse chronological order, listing the most recent publication first. Requests for copies of these publications should be directed to:

Publications Requests
OCS Information Program
Offshore Information and Publications
Minerals Management Service, MS 642
1951 Kidwell Drive, Suite 601
Vienna, Virginia 22180
(703) 285-2280.

Alaska Region

Arctic Subregion Summary Reports and Updates

o Arctic Summary Report, January 1985, Outer Continental Shelf Oil and Gas Activities in the Arctic and their Onshore Impacts. Christopher W. Lynch, Douglas L. Slitor, and Robert W. Rudolph. 1985. OCS Information Report, MMS 85-0022, U.S. DOI, 84 p.

o Arctic Summary Report Update, September 1983, Outer Continental Shelf Oil and Gas Activities in the Arctic and their Onshore Impacts. 1983. Jeffrey L. Deis and Robert Pierson. U.S. DOI, 58 p.

o Arctic Summary Report, January 1983, Outer Continental Shelf Oil and Gas Activities in the Arctic and their Onshore Impacts. 1983. Joanne Barnes Jackson and Frederick N. Kurz. U.S. DOI, 81 p.

o Update 1, May 1982, Outer Continental Shelf and Onshore Oil and Gas Activities and Impacts in the Arctic: A Summary Report, October 1981. Joanne Barnes Jackson and Barbara Cushmore Pretz. 1982. USGS Open-File Report 82-19, U.S. DOI, 76 p.

o Outer Continental Shelf and Onshore Oil and Gas Activities and Impacts in the Arctic: A Summary Report, October 1981. Joanne Barnes Jackson, B. Fritts Golden, Anne Stadnychenko, and Sharon Kolasinski. 1981. USGS Open-File Report 81-621, U.S. DOI, 137 p.

Bering Sea Subregion Summary Reports and Updates

o Bering Sea Summary Report, September 1984, Outer Continental Shelf Oil and Gas Activities in the Bering Sea and their Onshore Impacts. Jeffrey Deis. 1984. OCS Information Report, MMS 84-0076, U.S. DOI, 84 p.

o Bering Sea Summary Report, September 1983, Outer Continental Shelf Oil and Gas Activities in the Bering Sea and their Onshore Impacts. Jeffrey Deis, Robert Pierson, and Frederick N. Kurz. 1983. U.S. DOI, 81 p.

Gulf of Alaska Subregion Summary Reports and Updates

o Gulf of Alaska Summary Report Update, May 1984, Outer Continental Shelf Oil and Gas Activities in the Gulf of Alaska and their Onshore Impacts. Jeffrey D. Wiese. 1984. OCS Information Report, MMS 84-0030, U.S. DOI, 27 p.

o Gulf of Alaska Summary Report Update, April 1983, Outer Continental Shelf Oil and Gas Activities in the Gulf of Alaska and their Onshore Impacts. Joanne Barnes Jackson. 1983. U.S. DOI, 29 p.

o Gulf of Alaska and Lower Cook Inlet Summary Report 3, June 1982, Second Revision of Outer Continental Shelf Oil and Gas Activities in the Gulf of Alaska (including Lower Cook Inlet) and their Onshore Impacts: A Summary Report, September 1980. Joanne Barnes Jackson and Frederick N. Kurz. 1982. USGS Open-File Report 82-20, U.S. DOI, 79 p.

o Gulf of Alaska and Lower Cook Inlet Summary Report 2, June 1981, A Revision of Outer Continental Shelf Oil and Gas Activities in the Gulf of Alaska (including Lower Cook Inlet) and their Onshore Impacts: A Summary Report, September 1980. Karen M. Collins and Anne Stadnychenko. 1981. USGS Open-File Report 81-0607, U.S. DOI, 49 p.

o Outer Continental Shelf Oil and Gas Activities in the Gulf of Alaska (including Lower Cook Inlet) and their Onshore Impacts: A Summary Report, September 1980. Joanne Barnes Jackson and Richard T. Dorrier. 1980. USGS Open-File Report 80-1028, U.S. DOI, 78 p.

Regionwide Alaska Summary Report

o Alaska Summary Report (June 1984 - December 1985) Outer Continental Shelf Oil and Gas Activities in Alaska and their Onshore Impacts. James H. Collins and Christopher W. Lynch. 1986. OCS Information Report, MMS 86-0023, U.S. DOI, 114 p.

Alaska Indexes

o Alaska Index (May 1983 - January 1985). Denise D. Molajo. 1985. OCS Information Report, MMS 84-0037, U.S. DOI, 84 p.

o Alaska Index (December 1981 - April 1983). Mary Ann Collignon. 1983. U.S. DOI, 74 p.

o Alaska Index (December 1980 - November 1981). Mary Ann Collignon. 1982. USGS Open-File Report 82-18, U.S. DOI, 81 p.

Alaska Indexes *continued*

- o Alaska Index (December 1974 - November 1980). Richard T. Dorrier. 1981. USGS Open-File Report 81-20, U.S. DOI, 85 p.

Alaska Summary/Index

- o Alaska Summary/Index: January 1986 - December 1986. D. L. Slitor and J. D. Wiese. 1987. OCS Information Report, MMS 87-0016, 102 p.

Atlantic Region

North Atlantic Summary Reports and Updates

- o North Atlantic Summary Report Update, June 1983, Outer Continental Shelf Oil and Gas Activities in the North Atlantic and their Onshore Impacts. Alan S. Kurtz and Jeffrey L. Deis. 1983. U.S. DOI, 23 p.
- o North Atlantic Summary Report Update, February 1983, Outer Continental Shelf Oil and Gas Activities in the North Atlantic and their Onshore Impacts. Jeffrey L. Deis. 1983. U.S. DOI, 33 p.
- o Update 1, April 1982, Outer Continental Shelf Oil and Gas Activities in the North Atlantic and their Onshore Impacts: A Summary Report. Jeffrey L. Deis and Elizabeth O. Porter. USGS Open-File Report 82-16, U.S. DOI, 42 p.
- o Outer Continental Shelf Oil and Gas Activities in the North Atlantic and their Onshore Impacts: A Summary Report, July 1981. Richard T. Dorrier. 1981. USGS Open-File Report 81-601, U.S. DOI, 65 p.

Mid-Atlantic Summary Reports and Updates

- o Mid-Atlantic Summary Report, October 1983, Outer Continental Shelf Oil and Gas Activities in the Mid-Atlantic and their Onshore Impacts. Alan S. Kurtz and Jeffrey L. Deis. 1983. U.S. DOI, 44 p.
- o Mid-Atlantic Summary Report 2, October 1982, Outer Continental Shelf Oil and Gas Activities in the Mid-Atlantic and their Onshore Impacts. Jeffrey L. Deis and Frederick N. Kurz. 1982. U.S. DOI, 63 p.
- o Update 3, August 1981, Outer Continental Shelf Oil and Gas Activities in the Mid-Atlantic and their Onshore Impacts. Catherine A. McCord. 1981. USGS Open-File Report 81-619, U.S. DOI, 12 p.
- o Update 2, February 1981, Outer Continental Shelf Oil and Gas Activities in the Mid-Atlantic and their Onshore Impacts. Richard T. Dorrier. 1981. USGS Open-File Report 81-603, U.S. DOI, 18 p.
- o Update 1, June 1980, Outer Continental Shelf Oil and Gas Activities in the Mid-Atlantic and their Onshore Impacts. Jeffrey L. Deis. 1980. Update to USGS Open-File Report 80-17, U.S.

DOI, 18 p.

- o Outer Continental Shelf Oil and Gas Activities in the Mid-Atlantic and their Onshore Impacts: A Summary Report, November 1979. George S. Macpherson and Charles A. Bookman. 1980. USGS Open-File Report 80-17, U.S. DOI, 63 p.

South Atlantic Summary Reports and Updates

- o South Atlantic Summary Report, December 1983, Outer Continental Shelf Oil and Gas Activities in the South Atlantic and their Onshore Impacts. Kenneth J. Havran and Jeffrey D. Wiese. 1984. U.S. DOI, 34 p.
- o South Atlantic Summary Report Update, February 1983, Outer Continental Shelf Oil and Gas Activities in the South Atlantic and their Onshore Impacts. Kenneth J. Havran. 1983. U.S. DOI, 20 p.
- o South Atlantic Summary Report 2, May 1982, Outer Continental Shelf Oil and Gas Activities in the South Atlantic and their Onshore Impacts. Jeffrey L. Deis, Frederick N. Kurz, and Elizabeth O. Porter. 1982. USGS Open-File Report 82-15, U.S. DOI, 50 p.
- o Update 2, August 1981, Outer Continental Shelf Oil and Gas Activities in the South Atlantic (U.S.) and their Onshore Impacts: A Summary Report, July 1980. Catherine A. McCord. 1981. USGS Open-File Report 81-616, U.S. DOI, 13 p.
- o Update 1, February 1981, Outer Continental Shelf Oil and Gas Activities in the South Atlantic (U.S.) and their Onshore Impacts: A Summary Report, July 1980. Kenneth J. Havran. 1981. USGS Open-File Report 81-25, U.S. DOI, 14 p.
- o Outer Continental Shelf Oil and Gas Activities in the South Atlantic (U.S.) and their Onshore Impacts: A Summary Report, July 1980. Joanne Barnes Jackson. 1980. USGS Open-File Report 80-626, U.S. DOI, 62 p.

Regionwide Atlantic Summary Report

- o Atlantic Summary Report, December 1984, Outer Continental Shelf Oil and Gas Activities in the Atlantic Region and their Onshore Impacts. Robert W. Rudolph and Kenneth J. Havran. 1985. OCS Information Report, MMS 85-0021, U.S. DOI, 74 p.

Atlantic Indexes

- o Atlantic Index (June 1984 - January 1985). Christopher W. Lynch and Denise D. Molajo. 1985. OCS Information Report, MMS 85-0036, U.S. DOI, 114 p.
- o Atlantic Index (June 1983 - May 1984). Mary Ann Collignon. 1984. MMS 84-0050, U.S. DOI, 113 p.
- o Atlantic Index (June 1981 - May 1983). Catherine A. McCord. 1983. U.S. DOI, 120 p.
- o Atlantic Index (December 1980 - June 1981). Mary Ann Collignon. 1981. USGS Open-File Report 81-705, U.S. DOI, 173 p.

- Atlantic Index (January 1975 - November 1980). Martha Alison Salzmänn. 1981. USGS Open-File Report 80-1202, U.S. DOI, 193 p.

Atlantic Summary/Index

- Atlantic Summary/Index: January 1985-June 1986, Outer Continental Shelf Oil and Gas Activities. Jeffrey D. Wiese. 1986. OCS Information Report, MMS 86-0071, 38 p.

Gulf of Mexico Region

Gulf of Mexico Summary Reports and Updates

- Gulf of Mexico Summary Report/Index, November 1984-June 1986, Outer Continental Shelf Oil and Gas Activities in the Gulf of Mexico and their Onshore Impacts. Stephen P. Risotto and James H. Collins. 1986. OCS Information Report, MMS 86-0084, 102 p.
- Gulf of Mexico Summary Report, October 1984 - June 1985, Outer Continental Shelf Oil and Gas Activities in the Gulf of Mexico Region and their Onshore Impacts. Christopher W. Lynch and Stephen P. Risotto. 1985. OCS Information Report, MMS 85-0083, U.S. DOI, 108 p.
- Gulf of Mexico Summary Report, September 1984, Outer Continental Shelf Oil and Gas Activities in the Gulf of Mexico Region and their Onshore Impacts. Christopher W. Lynch and Robert W. Rudolph. 1984. OCS Information Report, MMS 84-0073, U.S. DOI, 108 p.
- Gulf of Mexico Summary Report, September 1983, Outer Continental Shelf Oil and Gas Activities in the Gulf of Mexico Region and their Onshore Impacts. Jeffrey D. Wiese, Douglas L. Sliator, and Catherine A. McCord. 1983. U.S. DOI, 106 p.
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- Gulf of Mexico Summary Report 2, August 1981, Outer Continental Shelf Oil and Gas Activities in the Gulf of Mexico Region and their Onshore Impacts. Kenneth J. Havran. 1981. USGS Open-File Report 81-620, U.S. DOI, 79 p.
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- Gulf of Mexico Index (August 1983 - October 1984). Denise D. Molajo, Stephen P. Risotto, and Virginia A. Farris. 1984. OCS Information Report, MMS 85-0043, U.S. DOI, 86 p.
- Gulf of Mexico Index (September 1982 - July 1983). Mary Ann Collignon. 1983. U.S. DOI, 125 p.

- Gulf of Mexico Index (December 1980 - August 1982). Mary Ann Collignon. 1982. U.S. DOI, 157 p.

- Gulf of Mexico Index (January 1978 - November 1980). Kenneth J. Havran, Karen M. Collins, Richard T. Dorrier, and Mary Ann Collignon. 1981. USGS Open-File Report 81-313, U.S. DOI, 181 p.

Pacific Region

Pacific Summary Reports and Updates

- Pacific Summary Report, April 1985, Outer Continental Shelf Oil and Gas Activities in the Pacific and their Onshore Impacts. Robert W. Rudolph and Paul M. Nikituk. 1985. OCS Information Report, MMS 85-0040, U.S. DOI, 90 p.
- Pacific Summary Report, July 1984, Outer Continental Shelf Oil and Gas Activities in the Pacific and their Onshore Impacts. Kenneth J. Havran and Christopher W. Lynch. 1984. OCS Information Report, MMS 84-0075, U.S. DOI, 80 p.
- Pacific Summary Report, September 1983, Outer Continental Shelf Oil and Gas Activities in the Pacific and their Onshore Impacts. Kenneth J. Havran. 1983. U.S. DOI, 103 p.
- Pacific Summary Report, December 1982, Outer Continental Shelf Oil and Gas Activities in the Pacific and their Onshore Impacts. 1983. Anne Stadnychenko and Catherine McCord. U.S. DOI, 109 p.
- Pacific Summary Report 2, May 1982, A Revision of Outer Continental Shelf Oil and Gas Activities in the Pacific (Southern California) and their Onshore Impacts: A Summary Report, May 1980. Karen M. Collins, Catherine A. McCord, Anne Stadnychenko, and Peter Yoskin. 1982. USGS Open-File Report 82-21, U.S. DOI, 121 p.
- Outer Continental Shelf Oil and Gas Activities in the Pacific (Southern California) and their Onshore Impacts: A Summary Report, May 1980. George S. Macpherson and Janis Bernstein. 1980. USGS Open-File Report 80-645, U.S. DOI, 134 p.

Pacific Indexes

- Pacific Index (April 1983 - October 1984). Denise D. Molajo. 1985. OCS Information Report, MMS 85-0004, U.S. DOI, 84 p.
- Pacific Index (July 1981 - March 1983). Jeffrey D. Wiese and Mary Ann Collignon. 1983. U.S. DOI, 86 p.
- Pacific Index (November 1980 - June 1981). Mary Ann Collignon. 1981. USGS Open-File Report 81-708, U.S. DOI, 89 p.
- Pacific Index (January 1962 - October 1980). Sharon L. Kolasinski. 1980. USGS Open-File Report 80-1201, U.S. DOI, 111 p.

Pacific Summary/Index

- Pacific Summary Report/Index: June 1, 1986 - July 31, 1987. Jeffrey D. Wiese and Douglas L. Slitor. 1987. OCS Information Report, MMS 87-0078, 143 p.

- Pacific Summary Report/Index: November 1984 - May 1986. Stephen Risotto and Robert Rudolph. 1986. OCS Information Report, MMS 86-0069, 117 p.

National

- OCS National Compendium, Outer Continental Shelf Oil and Gas Information Through 1984, May 1986, Paul M. Nikituk and Virginia A. Farris. OCS Information Report, MMS 86-0017, 172 p.

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